Family Ludidae

Body elongate, subcylindral to compressed. Snout obtusely rounded as seen from above. Eyes variably large to vestigeal or even absent. Maxillary expanded posteriorly, usually with single supramaxillary. Teeth in narrow bands, pointed, uniserial in jaws, usually on palatines. Vomerine teeth when present in 2 well separated patches. No air bladder. Skeleton rather weakly ossified. Posttemporals nearly meet above supraoccipital. Dorsal short, variably premedian, median or postmedian. Pectoral lateral. Ventrals not widely separated. Sometimes fin rays extended.

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Bathypelagic. As here defined this family includes a wide range of forms, some very aberrant as the remarkable eyeless Dysops, with modified luminous organs on top of the head. Bathypterois is remarkable for some of its greatly extended rays functioning as tactile organs, thus in a measure compensating for their reduced eyes.

Analysis of genera

a.' Body nearly or quite cylindrical; dorsal medial or premedian; anal short.

b.' Chlorophthalminae. Body moderately long, partly cylindrical; head wide as deep; snout rather short; maxillary reaches below front or middle of eye, which large; ventral fins below dorsal, which premedian.

c.' Maxillary not reaching over ½ in eye; interorbital less than vertical eye diameter; ventral inserted below dorsal; eyes long as or longer than snout, 3 in head. Chlorophthalmus.

c.² Maxillary reaches beyond eye; interorbital wider than vertical eye diameter; ventral inserted slightly before dorsal; eye shorter than snout. Bathysauropsis.

b.² Body elongate, subcylindrical or compressed; head depressed; snout more or less spatulate; mouth large; maxillary reaches

beyond eye.

d.' Notosudinae. Eyes moderate or well developed; fin rays not prolonged; dorsal median. Notosudis.

d.² Bathypterinae. Eyes very small or entirely absent; outer caudal and lowest ventral fin rays sometimes excessively extended.

e.' Eyes small, distinct; caudal and finbred fins with extended modified rays; vent nearly median.

f.' Pectoral inserted very high on shoulder girdle, normal.
Benthosaurus.

f.² Pectoral with rays formed in 2 distinctly separated groups on each side. Bathypteroix.

e.² Eyes vestigeal and covered by scales or entirely absent; fin rays not prolonged; vent premedian.

g.[1] Eyes vestigeal, covered by scales of normal size.
Bathymicrops.

g.[2] Eyes entirely absent; snout and upper part of head covered by pair of large transparent membrane like bones, each covering large luminous organ. Synaphis.

a.[2] Paralepidinae. Body well compressed, elongate, slender; head attenuated; dorsal far postmedian; anal long.

h.[1] Teeth entire, round, slender, some on palatines and in mandible rather enlarged.
Paralepis.

h.[2] Teeth triangular, edges uneven or jagged and of equal length; palatine teeth very small in young, absent with age.
Sudis.

Genus Chlorophthalmus Bonaparte

Chlorophthalmus Bonaparte, Fauna Italica, Pesce, vol. 3, fasc. 28, 1840, no pagination. Type Chlorophthalmus agassizii Bonaparte, monotypic.

Hyphalonedrus Goode, Proc. U. S. Nat. Mus., vol. 3, 1880, p. 484. Type Hyphalonedrus chalybeius Goode and Bean, monotypic.

Pelopsia Facciola, Natural. Siciliana, vol. 2, 1883, p. 145. Type Pelopsia candida Facciola.

Parasudis Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p.p. 127, 128. Type Chlorophthalmus truculentus Goode and Bean, monotypic.

3193

Body rounded, terete. Snout conic, rather short. Eyes nearly equal snout or larger. Mouth wide. Maxillary long, expanded posteriorly, reaches below front or middle part of eye; supplemental bone single. Teeth minute, in narrow bands in jaws. Vomerine teeth in 2 separated patches. Interorbital width shorter than vertical eye diameter. Pseudobranchiae well developed. Branchiostegals 10. Lateral line axial, complete. Dorsal premedian, without filamentous rays. Adipose dorsal present. Anal opposite adipose fin.

Caudal forked. Ventral behind dorsal origin.

Analysis of species

a. Chlorophthalmus. Maxillary reaches eye or to middle of eye.

b.' Head 3 to 3 1/3; maxillary reaches well beyond front eye edge.

c.' Scales 58 to 63. agassizii.
c.² Scales 50. floridens.

b.² Head more than 3 1/2; scales 48 to 56.

d.' Maxillary reaches front eye edge; eye scarcely over 3 in head. chalybaeus.
d.² Maxillary reaches well beyond front eye edge. nigripinnis.

a.² Parasudis. Maxillary not reaching front eye edge. truculentus.

3195

Chlorophthalmus agassizi Bonaparte

Chlorophthalmus agassizi Bonaparte, Iconogr. Fauna Italica, Pesce, vol. 3, fasc. 28, 1840, no pagination, pl., fig. 2 (two figures). Italy; — Cat. metod. Pesc. Europ., 1846, p. 36 (Mediterranean). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 563 (types). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, Dec. 1928, p. 19 (discussion).

Chlorophthalmus agassizii Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 404 (Messina). — Canestrini, Fauna Italica, Pesce, 1874, p. 123 (Naples, Sicily). — Jordan and Evermann, Bull. U. S. Nat. Mus., Bull. 47, pt. 1, 1896, p. 541 (compiled).

— Goode and Bean, Oceanic Ichth., 1895, p. 60, pl. 19, fig. 70 (N. 28° to 39° W. 70° to 86°, 159 to 273 fathoms).

Aulopus agassizi Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 521 (Naples; Messina). — Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 121, pl. 12, figs. 3 a-c (Cape Verde Islands, Sargasso Sea, Azores, 1105 to 1440 meters). — Griffini, Manual. Ittiol. Italiana, 1903, p. 268, fig. 146.

Scopelus agassizi Valenciennes, Hist. Nat. Poiss., vol. 22, 1849, p. 521 (name in text).

Pelopsia candida Facciola, Natural. Siciliana, vol. 2, 1883, p. 145.

Pelopsia scillae Facciola, Natural. Siciliana, vol. 2, 1883, p.

Chlorophthalmus productus Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 193, pl. 50, fig. d. Off Matuka, Fiji, ~~[illegible]~~ 315 fathoms. —

(Goode and Bean, Oceanic. Ichth., 1895, p. 61 (reference). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 379 (reference). — Weber, Siboga Exped., vol. 57, Fische, 1913, p. 79 (Madura Sea, 289 meters). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 177, fig. 69 (Madura Sea material). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 64 (compiled); Annals Natal Mus., vol. 6, pt. 3, May 1929, p. 249 (off Tugela River mouth, 200 fathoms), Chlorophthalmus corniger Alcock, Journ. Asiatic Soc. Bengal, vol. 63, pt. 2, no. 2, 1894, p. 133, pl. 6, fig. 5: Bengal Bay, 145 to 250 fathoms; Illustrat. Zool. Investigator, pt. 2, 1894, pl. 15, fig. 8. — Goode and Bean,

Oceanic Ichth., 1895, p. 511 (reference). — Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 334 (compiled); Cat. Deep Sea Fishes Indian Mus., 1899, p. 155 (Bay of Bengal, off Madras coast, 145 to 250 fathoms). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 145 (380) (West coast Sumatra and off North Africa, 371 to 977 meters). — Weber and Beaufort, Fishes Indo-Austral. Archipelago, vol. 2, 1913, p. 178 (compiled).

Depth 4 7/8 to 6 3/4; head 2 1/4 to 3 1/3, width 1 4/5 to 2. Snout 3 1/8 to 3 7/8 in head from snout tip; eye 2 to 2 4/5, greatly exceeds snout or interorbital; maxillary reaches 1/4 to 2/5 in eye, expansion 2 2/3 to 2 7/8 in eye, length 2 to 2 3/5 in head from snout tip; interorbital 7 1/2 to 11, low. Gill rakers 3 or 4 + 18 or 19, lanceolate, over twice gill filaments or 3 to 4 in eye.

Scales 49 to 54 in lateral line to caudal base and 3 to 5 more on latter; 4 to 6 above, 5 to 7 below, 11 to 14 predorsal, 2 rows on cheek. Caudal base finely scaled. Scales with 25

Chlorophthalmus agassizi Bonaparte

Chlorophthalmus agassizi Bonaparte, Fauna Italica, Pesce, vol. 3, fasc. 28, 1840, no pagination, pl. 1, fig. 2 (two figures). Italy. — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 563 (types). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 2, dec. 1928, p. 19 (discussion).

Pelopsia candida Facciola, Natural. Siciliana, vol. 2, 1883, p. 145.

Pelopsia stellae Facciola, Natural. Siciliana, vol. 2, 1883, p.

Chlorophthalmus productus Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 193, pl. 50, fig. d. Off Matuka, Fiji, in 315 fathoms. —

to 44 basal circuli; firm apical edge with 6 to 12 little defined minute irregular points.

D. II, 8, I or II, 9, I, first branched ray 1 1/3 to 1 2/3 in total head length; adipose fin 4; A. I or II, 6 I to i, 9, I, first branched ray 2 1/4 to 2 1/2; caudal 1 1/3 to 1 4/5, deeply forked; least depth of caudal peduncle 3 2/3 to 4 2/3; pectoral 1 1/8 to 1 2/5; ventral 1 2/5 to 1 4/7.

Largely pale brown, paler to white below. Iris silvery white. Opercle and sides of head with silvery white reflections. Inside gill opening dusky. Fins pale or uniform brownish.

Atlantic, Pacific and Indian Oceans.

5595. D. 5216. Anima Sola Island, N. 44° W., 29.50 miles (N. 12° 52' ~~#~~ E. 123° 23' 30"), between Burias and Luzon. In 19 to 215 fathoms. April 22, 1908. Length 240 mm.

10253. D. 5550. Jolo Light (E.), ~~83°~~ N. ~~60°~~ E., ~~15.5~~ miles (N. ~~56°~~ ~~44'~~ ~~30"~~ E. 120° 44' ~~##~~ 40"), Jolo Island and vicinity. In 258 fathoms. September 17, 1909. Length 270 mm.

10161 U.S.N.M. Europe. C.L.
Bonaparte. Academy of Natural Sciences
of Philadelphia. Length 121 to 137 mm.
3 examples.

40071 U.S.N.M. Messina. Royal Zool.
Inst. Florence. Length 40 to 47 mm.
11 examples.

41600 U.S.N.M. N. 32° W. 77°
Albatross Station 2314. Length 107 to 113 mm.
2 examples.

42101 U.S.N.M.
Inst. Hist. Nat. Paris 85+70. Length 155 mm.

42102 U.S.N.M.
Inst. Hist. Nat. Paris 85+71. Length 144 mm.

43826 U.S.N.M. N. 32° W. 77°
Albatross Station 2314. Length 55 to 115 mm.
21 examples.

43827 U.S.N.M. N. 30° W. 79°
Albatross Station 2667. Length 147 mm.

43828 U.S.N.M. N. 37° W. 74°
Albatross Station 2264. Length 60 to 80 mm.
16 examples.

43831 U.S.N.M. N.39° W.70°
Albatross Station 2543. Length 62 to 68 mm.
2 examples.

43832 U.S.N.M. N.36° W.74°
Albatross Station 2425. Length 72 to 79 mm.
2 examples.

43836 U.S.N.M. N.39° W.70°
Albatross Station 2539. Length 100 mm.

43838 U.S.N.M. N.39° W.70°
Albatross Station 2543. Length 60 mm.

43839 U.S.N.M. N.40° W.70°
Albatross Station 2544. Length 63 to 65 mm.
2 examples.

43840 U.S.N.M. N.28° W.86°
Albatross Station 2398. Length 93 to 138 mm.
3 examples.

43841 U.S.N.M. N.39° W.70°
Albatross Station 2543. Length 111 mm.

43852 U.S.N.M. N.32° W.77°
Albatross Station 2624. Length 51 to 153 mm.
3 examples.

43853 U. S. N. M. N. 28° W. 85°
Albatross Station 2402. Length 70.? mm.,
caudal broken.

46131 U. S. N. M.
Albatross Station 2665. Length 118 to 147 mm.
8 examples.

7939 to 7954 A. N. S. P. Italy. C. L.
Bonaparte 81. Dr. T. B. Wilson. Length 75
to 125 mm. Types.

A. N. S. P. Off Tugela River
mouth, Natal. In 200 fathoms.
H. W. Bell Marley. Length 140 mm.

3206

Chloroph*th*almus proridens (Gilbert and Cramer)

Chloroph*th*almus proridens Gilbert and Cramer, Proc. U. S. Nat. Mus., vol. 19, 1896, p. 406, pl. 36, fig. 2. North Lat. 21° 8' to 21° 9', W. Long. 157° 43' to 157° 53', in 298 to 351 fathoms. — Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 589 (Pailolo Channel, off Oahu, Laysan, Maui and Kauai, 195 to 352 fathoms). — Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 380 (reference). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 64 (Gilbert's materials).

Depth 5 1/4 to 6 4/5; head 3 to 3 1/4, width 1 4/5 to 2. Snout 3 2/5 to 3 1/2 in head from snout tip; eye 2 1/4 to 2 2/5, greater than snout or very narrow interorbital; maxillary reaches 1/3 to 2/5 in eye, expansion 2 1/3 to 3 in eye, length 2 to 2 1/5 in head from snout tip; interorbital 8 to 10 in eye, low, with deep median groove. Gill rakers 3 + 19 to 21, lanceolate, twice gill filaments or 1/3 of eye.

Scales 48 to 50 in lateral line to caudal base and 2 or 3 more on latter; 5 above, 5 below, 12 or 13 predorsal, 3 rows on cheek. Scales

with 44 or 45 basal radiating circuli, obscure apically; 10 to 12 broad short apical points.

D. II, 8, I to II, 10, I, fin height 1½ to 2 1/8? in total head length; adipose fin 5 1/5 to 8 7/8; A. II, 7, I or II, 8, I, fin height 2 1/5 to 3 1/3; caudal 1 2/3 to 1 7/8, forked; least depth of caudal peduncle 4 3/5 to 5; pectoral 1 2/5 to 1 2/3, rays 14 or 15; ventral 1 3/5 to 1 7/8? in total head length, rays 9.

Brownish, under surfaces paler with silvery white tints. All of belly and breast sprinkled with numerous fine dusky close set dots. Head

rather pale brown. Iris grayish, with paler shades. Inside gill opening dusky. Fins brownish, front basal part of dorsal and ventral with 3 inner rays and upper part of axil blackish. Caudal dusky basally. Small examples show whole body more or less finely dotted with blackish to dusky, often following in transversely oblique series. Back with 10 dark obscure saddles, variably prominent.

Pacific Ocean.

47697 U.S.N.M.

Albatross Station 3475.

Length 75 mm.

47715 U.S.N.M.

Albatross Station 3476. Length 165? mm.,
caudal broken. Type. Also 2
paratypes, 104 to 113 mm.

55258 U.S.N.M.

Albatross Station.
Length 74 to 190 mm. 12 examples.

Chlorophthalmus chalybeius (Goode)
Hyphalonedrus chalybeius Goode, Proc.
U. S. Nat. Mus., vol. 3, 1880 (1881), p. 483.
Fish Hawk Stations, 876 and 878, 120 to 142
fathoms, Gulf Stream. — Jordan and Gilbert,
Bull. U. S. Nat. Mus, No. 16, 1882, p. 296
(copied).
Chlorophthalmus chalybeius Goode and Bean,
Oceanic Ichth., 1896, p. 60, pl. 19, fig. 71
(Gulf Stream, 85 to 167 fathoms). — Jordan
and Evermann, Bull. U. S. Nat. Mus., No.
47, pt. 1, 1896, p. 542 (compiled).
Chlorophthalmus agassizii (not Bonaparte)
Günther, Rep. Voy. Challenger, vol. 22, 1887,
p. 132.

Chlorophthalmus chalybeius Goode

Chlorophthalmus chalybeius Goode,
Prod. U. S. Nat. Mus., vol. 3, 1880 (1881),
p. 483. Fish Hawk Stations 876 and 878,
off Marthas Vineyard.
120 to 142 fathoms, — Goode and Bean,
Oceanic Ichth., 1895, p. 60, pl. 19 fig. 71
(types; 85 to 167 fathoms).

Chlorophthalmus (Chlorophthalmus) chalybeius Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 19 (compiled).

Chlorophthalmus agassizii (not Bonaparte) Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 132.

Depth 5 3/4 to 6 1/4; head 3 to 3 1/2, width 2 to 2 1/8. Snout 3 1/3 to 3 1/2 in head from snout tip; eye 2 to 2 1/2, greatly exceeds snout or very narrow interorbital; maxillary reaches 1/4 to 1/3 in eye, expansion 2 2/5 to 3 1/5 in eye, length 2 to 2 3/4 in head from snout tip; interorbital 8 1/2 to 9, low, level, narrow bony frenum. Gill rakers

Chlorophthalmus mento Garman

Chlorophthalmus mento Garman,
Mem. Mus. Comp. Zool., vol. 24, 1899, p.
253, pl. 54, figs. 1–1c. N. 7°32'36" W. 79°
16', 286 fathoms; N. 7°33'12" W. 79°17'15",
242 fathoms; N. 7°16'45" W. 79°56'30", 210
fathoms.

3213.

4 + 19, lanceolate, slender, 3 in eye; gill filaments 2/3 gill rakers.

Scales 44 to 47 in lateral line to caudal base and 4 more on latter; 6 above, 6 below, 12 or 13 predorsal forward opposite hind eye edge. Scales with 33 basal circuli, imperfect apically, 12 large broad apical points.

D. II, 9, I, first branched ray 1 2/5 to 1 2/3 in total head length; adipose fin 3 to 5; A. II, 6, I, first branched ray 2 to 2 2/5; caudal 1 1/3 to 1 3/5, well emarginate or forked; least depth of caudal peduncle 3 1/2 to 3 4/5; pectoral 1 1/5 to 1 1/4; ventral 1 2/5 to 1 4/5.

Brownish, nearly uniform. Sides with brilliant silvery white reflections. Iris grayish silvery. Fins pale brownish to whitish. Small examples with 10 slightly darker brown saddles on back much broader than paler interspaces.

Atlantic Ocean.

26092 U.S.N.M.
Off Block Island. 1880. Length 52 to 108 mm.
7 examples.

28976 U.S.N.M. N. 39° W. 70°
Albatross Station . Length 56 to 70 mm.
7 examples.

28995 U.S.N.M. N. 38° W. 73°
Albatross Station . Length 64 to 70 mm.
2 examples.

29062 U.S.N.M.
Fish Hawk Station . Length 69 to 93 mm.
8 examples.

31644 U.S.N.M. N. 40° W. 70°
Length 61 to 66 mm.
2 examples.

43829 U.S.N.M. N. 37° W. 74°
Albatross Station 2420. Length 49 to 59 mm.
2 examples.

43830 U.S.N.M. N. 36° W. 74°
Albatross Station 2424. Length 60 to 61 mm.
2 examples.

43831 U.S.N.M. N. 36° W. 74°
Albatross Station 2425. Length 55 to 92 mm.
5 examples.

43833 U.S.N.M. N. 39° W. 70°
Albatross Station 2536. Length 52 to 62 mm.
2 examples.

43834 U.S.N.M. N. 39° W. 70°
Albatross Station 2536. Length 64 to 66 mm.
2 examples.

3216

43836 U.S.N.M. N.39° W.70°
Albatross Station 2537. Length 72 mm.

91404 U.S.N.M.
Albatross Station 20035. In 86 fathoms.
December 9, 19 . Length 55 mm.

Chlorophthalmus nigripinnis Günther

Chlorophthalmus nigripinnis Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 182. Off Twofold Bay, New South Wales, in 120 fathoms. — Macleay, Proc. Linn. Soc. New South Wales, vol. 6, 1881, p. 221 (copied). — Günther, Rep. Voy. Challenger, vol. 22, 1887, p. 193, pl. 51a (types). — Waite, Proc. New Zealand Institt., 1910, p. 25 ( ); Records Canterbury Mus., vol. 1, 1911, p. 164, pl. 25 ( ). — McCulloch, Zool. Res. Endeavour, vol. 1, pt. 1, Dec. 22, 1911, p. 22 (Tasmania, Bass Strait, New South Wales). — Waite, Records Canterbury Mus., vol. 1, no. 4, Dec. 28, 1912, p. 317 (reference). — Parr,

Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 20 (discussion).

Chlorophthalmus nigripinnis Waite, Mem. Austral. Mus., vol. 4, 1899, p. 54, text fig. 4 (tail) (New South Wales, 40 to 150 fathoms).

Chlorophthalmus memoto Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 253, pl. 54, figs. 1-1c. N. 7° 32' 36" W. 79° 16', 286 fathoms; N. 7° 33' 12" W. 79° 17' 15", 242 fathoms; N. 7° 16' 45" W. 79° 56' 30", 210 fathoms).

Chlorophthalmus albatrossis Jordan and Starks, Bull. U. S. Fish Comm., vol. 22, 1902 (1904), p. 579, pl. 1, fig. 1. Sagami Bay, Japan, in 153 fathoms; Suruga Bay, in 65 to 125 fathoms. — Franz, Abhandl. Kön. Bayer. Akad. Wiss., vol. 4, Suppl. Band 1, 1910, p. 21 (Fukuura).

Chlorophthalmus punctatus Gilchrist, Marine Invest. South Africa, vol. 3, 1905, p. 15, Lion's Head, bearing N. 63° E. distant 34 miles, in 154 fathoms. (Error.)

Chlorophthalmus punctatus Gilchrist, Marine Invest. South Africa, vol. 3, 1905, pl. 35. — Gilchrist and Von Bonde, Fisher. Marine Biol. Surv. Rep., No. 3, 1922 (1924), p. 7 (Natal coast and off Delagoa Bay, 175 to 240 fathoms). — Barnard, Ann. South African Mus., vol. 21, pt. 1, 1925, p. 230 (compiled).

3220

Depth 4 1/2 to 6; head 3 to 3 1/3, width 1 3/4 to 2. Snout 3 1/4 to 3 1/2 in head from snout tip; eye 2 1/2 to 2 3/5, greatly exceeds snout or narrow interorbital; maxillary reaches 1/3 to 3/5 in eye, expansion 2 2/3 to 3 in eye, length 2 1/5 to 2 1/3 in head from snout tip; interorbital 7 3/4 to 8 1/2, low, narrow, bony constriction. Gill rakers 3+18, lanceolate, longest slightly longer than gill filaments or 1/4 of eye.

Scales 44 to 50 in lateral line to caudal base and 3 or 4 more on latter; 6 above, 5 below, 14 predorsal

forward opposite hind eye edge. Scales with 39 or 40 basal radiating circuli, incomplete apically; 11 or 12 broad short apical points.

D. II, 9, I, first branched ray 1 1/3 to 1 2/5 in total head length; adipose fin 4 to 4 1/3; A. II, 7, I, first branched ray 2 3/5 to 2 7/8; caudal 1 3/5?; widely forked; least depth of caudal peduncle 3 7/8 to 4; pectoral 1 1/10 to 1 1/8; ventral 1 2/5 to 1 1/2.

Olivaceous brown, dusted everywhere with dark or blackish fine dots. Scales anteriorly below and abdomen with silvery sheen. Pectoral axil

blackish brown. Iris neutral gray. Inside gill opening dusky. Fins brownish, inner ventral rays blackish. Small examples with 10 obscure underlaid dark saddles or blotches on back.

Pacific and Indian Oceans.

51446 U.S.N.M.

Albatross Station 3698. In 153 fathoms. Length 168? mm. Type of Chlorophthalmus alfatrossis.

51447 U.S.N.M.

Albatross Station . Length 117 to 132 mm. 2 examples.

57848 U.S.N.M.

Albatross Station 3389. Length 160 to 164 mm. 2 examples. As Chlorophthalmus mento.

Chlorophthalmus truculentus (Goode and Bean

Chlorophthalmus truculentus Goode and Bean, Oceanic Ichth., 1895, p. 61, pl. 19, fig. 72. Blake Station L.II, 158 fathoms, off Barbadoes. — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 542 (copied).

Chlorophthalmus (Parasudis) truculentus Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 18 (reference).

Parasudis truculentus Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p.

3224

Depth 4 1/3 to 4 3/4; head 3 to 3 1/5, width 2 to 2 2/3. Snout 2 1/4 to 2 1/2 in head from snout tip; eye 3 to 3 3/5, 1 1/5 to 1 1/4 in snout, greatly exceeds narrow interorbital; maxillary reaches 7/8 to 9/10 in snout, expansion 2 4/5 to 3 in eye, length 2 3/5 to 2 3/4 in head from snout tip; interorbital 8 1/2 to 9 1/4, low. Gill rakers 2 + 11, lanceolate, slightly less than gill filaments, which 2 4/5 in eye.

Scales 50 to 60 in lateral line to caudal base and 4 or 5 more on latter; 6 above, 6 or 7 below, 14 to 16 predorsal forward to eyes. Scales

with 40 or 41 basal circuli, not extending apically; 12 to 16 short apical points.

D. II, 8, I, first branched ray 1½ to 2 in total head length; adipose fin 4½ to 6; A. II, 7, I, first branched ray 2 1/3 to 2 2/5; caudal 1¼ to 1 2/5, forked; least depth of caudal peduncle 4 1/5 to 4 2/5; pectoral 1 2/5 to 1½; ventral 1½ to 2.

Brown above, paler below, though some specimens more or less uniform brownish. Side usually with silvery tints and under surface usually white. Iris silvery white to gray.

Fins pale to whitish.

Atlantic Ocean.

44416 U.S.N.M.

Albatross Station 2125.
Length 235 mm. As Chlorophthalmus chalybaeus.

92047 U.S.N.M.

South of Tortugas. Prof. W. H. Longley.
Length 53-6 to 167 mm; 4 examples; As Chlorophthalmus chalybaeus.

Genus Bathysauropsis Regan

Bathysauropsis Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p. 126. Type Chlorophthalmus gracilis Günther, monotypic.

Body elongate, subcylindrical or compressed. Head depressed. Snout more or less spatulate. Eye moderately large, less than snout. Mouth large. Maxillary extends beyond eye. Teeth in coarsely villiform bands in jaws, uniserial on vomer and palatines; vomerine series interrupted medially; few minute teeth on tongue. Interorbital wider than vertical eye diameter. Branchiostegals 10. Pyloric appendages 2. No air bladder. Scales cycloid, regularly arranged. Lateral line completely axial. Fin rays not prolonged. Ventral before dorsal.

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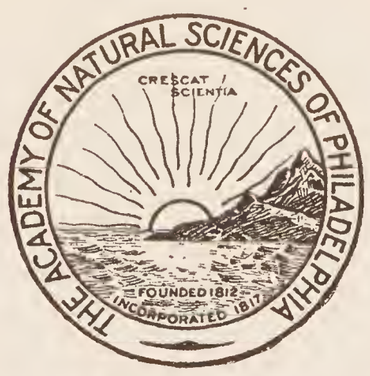

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3228

Bathysauropsis gracilis (Günther)

Chlorophthalmus gracilis Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 182. Off Eastern coast of New Zealand, off Juan Fernandez, middle of South Atlantic, in 1100, 1375, 1425 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 194, pl. 49, fig. A (types). — Goode and Bean, Oceanic Ichth., 1895, p. 511 (copied). — Waite, Records Canterbury Mus., vol. 1, No. 1, April 25, 1907, p. 13 (reference). — Gilchrist, Marine Invert. South Africa, vol. 4, 1906, p. 165 (off Cape Point, 755 fathoms). — Thompson, Marine Biolog. Rep. South Africa, vol. 3, 1916, p. 82 (off South Africa). — Gilchrist and Von Bonde, Marine Biol. Rep. South Africa, No. 3, 1924, p. 7 (off Cape Point and Table Bay, 600 to 1220 fathoms).

3229

Bathyuroptis gracilis Regan, Ann.
Mag. Nat. Hist., Series 8, Vol. 7, 1911, p.
[illegible] Waite, Records
Canterbury Mus., vol. 1, no. 4, Dec. 28, 1912,
p. 317 (reference). — Barnard, Ann.
South African Mus., vol. 21, pt. 1, 1925,
p. 230 (off Cape Point and Table Bay,
475 to 1220 fathoms). — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3,
Art. 3, Dec. 1928, p. 18 (compiled).

Depth 7½; head 3¾, width 2.
Snout 3½ in head from snout
tip; eye 4⅔, 1¼ in snout, equal
interorbital; maxillary extends
⅓ eye diameter behind eye, expansion
1⅞ in eye, length 1⅞ in head from

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Secretary

Logan Square
Philadelphia, Pa.

snout tip; interorbital 4 2/3, flat. Gill rakers close set, needle shaped, long as eye.

Scales 60 in lateral line; 6 above, 4 below.

D. III, 8, I, first branched ray 1 1/2 in total head length; adipose fin 7; A. III, 9, I, first branched ray 3; caudal 1 1/3; least depth of caudal base 5 1/4; pectoral 1 1/5; ventral 2, outer rays sometimes dilated.

Uniformly blackish brown, fins lighter. Length 242 mm. (Günther.)

Southern Atlantic and Pacific Oceans.

Genus Notosudis Waite

Notosudis Waite, Australasian Antarctic Exped., Sci. Rep., series C, Zool. Bot., vol. 3, pt. 1, June 30, 1916, p. 56. Type Notosudis hamiltoni Waite, monotypic.

Body well elongated, subcylindrical. Head wide as deep, rather large, conic. Snout long, pointed. Eye moderate, less than snout. Maxillary extends well behind eye. Supplemental maxillary present. Mandible protrudes. Teeth uniserial in jaws, on palatines and narrow band on ventral. Opercles thin, unarmed. Gill membranes free from isthmus. No pseudobranchiae.

3232

Branchiostegals 10. Scales? Lateral line axial, apparently complete. Dorsal origin median in body without caudal. Adipose fin inserted behind anal base. Anal far postmedian, short. Caudal small, forked. Pectoral placed median in body depth. Ventral?

Notosudis hamiltoni Waite

Notosudis hamiltoni Waite, Australasian Antarctic Exped., Sci. Rep., series C, Zool. Bot., vol. 3, pt. 1, June 30, 1916, p. 57, text fig. 12 (outline of head above), pl. 5, fig. 2. Macquarie Island. — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, dec. 1928, p. 22 (reference).

Depth 8 1/3; head, 4 1/4, width 2 1/2. Snout 3 1/4 in head from snout tip; eye 5 2/5, 1 3/4 in snout, 1 1/5 in interorbital; maxillary extends half an eye diameter behind eye, expansion 1 2/3 in eye, length 1 3/4 in head from snout tip; interorbital 4 2/5, level. Gill rakers

0 + 20, needle like spines.

Scales if present all lost in type except some tubular ones forming part of course of lateral line, these medial on side of tail.

D. 17, fin base 3 in total head; adipose fin 5 1/2; A. 15, fin base 3 7/8; caudal 2 1/8?, well forked; least depth of caudal peduncle 5 1/5; paired fins damaged.

Length 505 mm. (Waite.)

Macquarie Island.

3235

Genus Benthosaurus Goode and Bean

Benthosaurus Goode and Bean, Bull. Mus. Comp. Zool., vol. 12, 1886, no. 5, p. 168.

Type Benthosaurus grallator Goode and Bean, monotypic.

Body elongate, tapers back to rather long slender caudal pedencle. Head slightly depressed. Eye very small, inconspicuous. Mouth cleft wide, horizontal, lower jaw protruding. Maxillary long, not stout, expanded posteriorly. Premaxillaries and mandible with bands of small uniform teeth; short oblong band each side of vomer, interspace rather wide;

Bathypteroïs longicauda (Günther

Bathypteroïs longicauda (Günther,

Ann. Mag. Nat. Hist., ser. 5, vol. 2, 1878,

p. 184. middle of South Pacific, 2550

fathoms; Rep. Voy. Challenger, vol. 22, 1887,

p. 188, pl. 26, fig. B (type). — Goode

and Bean, Oceanic Ichth., 1895, p. 64

(reference).

palatines and tongue smooth. Gill opening very wide, membranes free from isthmus. Gill rakers long, slender, numerous. Pseudobranchiae present. Branchiostegals 11. Scales cycloid, moderate. Lateral line axial, complete. Dorsal median. No adipose fin. Anal postmedian. Caudal forked, lowest ray produced. Pectoral inserted rather high. Ventral rays 7, inserted midway in space between pectoral and ventral, outer or lower produced ray reaches beyond caudal.

3237

Benthosaurus grallator (Goode and Bean)

Benthosaurus grallator Goode and Bean, Bull. Mus. Comp. Zool., vol. 12, 1886, no. 5, p. 168. N. 24°33' W. 84°23', 1850 fathoms; Oceanic Ichth., 1895, p. 62, pl. 19, fig. 73 (type; N. 39°3'15" W. 70°50'45", 1537 fathoms). — Jordan and Evermann, Bull. U. S. Nat. Mus., no. 47, pt. 1, 1896, p. 543 (copied). — Murray and Hjort, Depths of the Ocean, 1912, p. 396 (N. 34°59' W. 33°1', 2615 to 2865 meters). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 23 (compiled).

3238

Depth 5 3/4 to 7 1/5; head 3 1/2 to 3 3/4, width 2 3/5 to 2 3/4. Snout 3 1/4 to 3 3/5 in head from snout tip; eye 20 to 22, 4 3/4 to 6 1/2 in snout, 7 1/5 to 8 in interorbital; maxillary extends 9 1/2 eye diameters behind eye, expansion equals 1 1/2 to 1 4/5 eye diameters, length 1 2/5 in head from snout tip; interorbital 3 to 3 2/5, low, broadly convex. Gill rakers 9 + 25, finely lanceolate, slender, 4 times eye; gill filaments 3/5 gill rakers.

Scales 50 to 53 in lateral line to caudal base and 5 to 7 more on latter; 9 above, 8 or 9 below, 29 to 36 predorsal forward opposite front eye edge.

Scales very caducous, most all fallen. Scales cycloid, with fine basal circuli, obsolete apically.

D. II, 10, I to II, 12, I, first branched ray 1 1/3 to 1 3/5 in head length; A. II, 12, I, first branched ray 1 2/5 to 1 1/2; least depth of caudal peduncle 4 to 4 1/5; upper caudal lobe 1 1/8 to 1 1/4, lower terminal filament 1 1/6 in rest of body; pectoral 2 3/4 to 3, rays 9; ventral rays 7, first greatly prolonged beyond tip of caudal filament, equal body without caudal or 1 1/8 in same.

Body blackish brown. Small eye grayish. Head brownish anteriorly,

opercles blackish. Mouth roof, inside branchiostegal membranes and opercle black. Fins whitish.

Atlantic Ocean.

35651 U.S.N.M. N. 39° 3' 15" W. 70° 50' 45".

In 1537 fathoms. Albatross Station 2222. Length 3 1/16 mm. to end of upper caudal lobe.

44675 U.S.N.M.

Albatross Station 2571. Length 295 mm. To end of upper caudal lobe.

Genus Bathypterois Günther

Bathypterois Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 183. Type Bathypterois longifilis Günther, designated by Jordan, Genera of Fishes, pt. 3, 1919, p. 395.

Dysapteretmus Goode and Bean, Oceanic Ichth., 1895, p. 64. Type Bathypterois quadrifilis Günther, designated by Jordan, Stanford Univ. Public., Univ. Ser. Biol. Sci., (Class. Fishes), vol. 3, No. 2, 1923, p. 154.

Hemipterois Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p. 127. Type Bathypterois guentheri Alcock, orthotypic.

Belonepterois Roule, Bull. Inst. Océanogr. Monaco, No. 320, 1916, p. 13. Type Belonepterois viridescens Roule, monotypic.

Brachypteroïs Jordan and Seale, Bull.
Bur. Fisher., vol. 25, 1905 (1906), p. 189.
Type Bathypteroïs longifilis Günther.
(Misprint for Bathypteroïs.)

Body elongate, compressed. Head depressed forward. Snout and forehead broad, depressed. Eyes very small. Mouth cleft wide, mandible protruding. Teeth in villiform bands in jaws, 2 patches on vomer, none on palatines or tongue. Scales thin, adherent, moderate. Dorsal moderate. Adipose dorsal usually present. Anal short, not longer than dorsal. Caudal rather large. Pectoral rays airanged in 2 distinctly separated groups, as upper and

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lower, upper ones of upper group greatly prolonged. Ventral premedian.

Analysis of species

a. Bathypteroïs. Upper group of pectoral rays 4 or less.

b. Lower edge of caudal basally with distinct or prominent notch.

c. Anal origin well behind end of dorsal. dubius.

c.² Anal origin below dorsal base or immediately behind vertical from its termination.

d. Head 5 1/2; lower caudal rays with swollen tips but slightly shorter than upper rays. ater.

d.² Head less than 5; lower caudal lobe more or less longer than upper, often with separately produced rays. atricolor.

b.² Lower edge of caudal without notch.

e.¹ Anal origin below middle of dorsal. Longipes.

e.² Anal origin below end of dorsal fin base or posterior.

f.¹ Lower group of pectoral rays 9, lower ray in lower group produced like upper ray in upper group; snout 3 in head; scales 5-9 in lateral line; outer ventral rays moderately produced; lower caudal rays not produced. quadrifilis.

f.² Lower group of pectoral rays 12 and longest pectoral ray not produced; snout 2 3/5 in head; outer ventral and lower caudal rays moderately produced. filiferus.

f.⁴ Lower group of pectoral rays 12 or 13 and lower pectoral rays not produced; snout 3 in head; scales 48 to 51; outer ventral and lower

caudal rays moderately produced.
insularum.

e.² Anal origin well behind end of dorsal; lower group of pectoral rays 13; scales 61 in lateral line; anal origin well behind end of dorsal; outer ventral rays not produced, tips dilated. longifilis.

a.² Hemipteros. Upper group of pectoral rays 6 or more; lower caudal edge not notched; outer ventral and lower caudal rays strongly produced.

f.¹ Two upper rays of upper pectoral group detached, rigid and enormously produced; anal origin just behind end of dorsal. guntheri.

g.² Two upper pectoral rays rudimentary or absent, all in upper group united by stout fin membrane and none reaching past dorsal; anal origin under middle of dorsal fin base. viridescens.

3246

Bathypteroïs dubius Vaillant

Bathypteroïs dubius Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 124, pl. 9, figs. 1, a-f, pl. 12, figs. 4-a, pl. 14, fig. 4, pl. 15, figs. 4, a-b. Coasts of Morocco, Canaries, Soudan, Banc d'Arguin, Azores, 834 to 1635 meters. — Goode and Bean, Oceanic Ichth., 1895, p. 64, pl. 20, fig. 74 (copied). — Collett, Rés. (Sci. Camp.) Monaco, vol. 10, 1896, p. 105, pl. 4, fig. 19 (N. 39° 18' 5" W. 33° 22' 15", 1372 meters; N. 39° 22' 48" W. 33° 45' 30", 1384 meters; N. 38° 33' 21" W. 30° 28' 54", 1300 meters; Azores). — Murray and Hjort, Depths of the Ocean, 1912, p. 396, fig. 266 (N. 35° 32' W. 7° 7'; 1215 meters; N. 28° 8" W. 13° 35'; 1365 meters).

3246

Bathypteroïs dubius Vaillant

Bathypteroïs dubius Vaillant, Exped. Sci. Travailleur et Talisman, Poiss., 1888, p. 124, pl. 9, figs. 1, a-f, pl. 12, figs. 4-a, pl. 14, fig. 4, pl. 15, figs. 4, a-b. Coasts of Morocco, Canaries, Soudan, Banc d'Arguin, Azores, 834 to 1635 meters. — Goode and Bean, Oceanic Ichth., 1895, p. 64, pl. 20, fig. 74 (copied). — Collett, Rés. (Sci. Camp.) Monaco, vol. 10, 1896, p. 105, pl. 4, fig. 19 (N. 39° 18' 5" W. 33° 22' 15", 1372 meters; N. 39° 22' 48" W. 33° 45' 30", 1384 meters; N. 38° 33' 21" W. 30° 28' 54", 1300 meters; Azores). —

Zugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 16 (N. 45° 9' W. 3° 18', 1804 meters; N. 40° 5' W. 9° 54', 1241 meters, off Portugal).

→

3247

— Roule, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 34 (N. 38°20'W. 28°4'45"; 1550 meters; N. 16°34'W. 23°3'15", 1477 meters; N. 38°40' W. 26°00'45", 1805 meters; Azores). — Vaillant, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (N. 38°26'W. 26°30'45", 1165 meters; N. 37°42' 40" W. 25° 5'15", 1385 meters; N. 39°22' W. 26° 55'45", 1940 meters; Azores). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, dec. 1928, p. 26 (compiled). Bathypterois pectoralis Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 257, pl. K, fig. 1. N. 23° to S. 0°, W. 79° to 108°, 885 to 1132 fathoms.

Depth 7 1/2 to 7 3/4; head 4 1/3 to 4 3/4, width 2 1/5 to 2 1/4. Snout 3 to 3 1/4 in head from snout tip; eye 8 to 15, 2 3/4 to 4 4/5 in snout, 4 2/5 to 6 in interorbital; maxillary extends 2 1/3 to 4 1/2 eye diameters behind eye, 1 to 1 1/4 times eye, length 1 1/2 to 1 3/5 in head; interorbital 2 3/5 to 2 4/5, low, broadly convex. Gill rakers 13 + 30, finely lanceolate, 4 times eye; gill filaments 3/4 of gill rakers.

Scales 59 in lateral line to caudal base and 3 more on latter; 6 above, 7 below, 27 predorsal forward opposite front of eye. Scales all

very caducous, most all fallen.
Scales with 14 or 15 complete circuli.

D. II, 12, I to II, 14, first branched
ray 1 to 1 1/5 in total head length;
adipose fin 4 3/4 to 5 1/4, inserted
midway between last third or fourth
of dorsal base and caudal base;
A. I, 8, I or I, 9, I, first branched
ray 1 1/4 to 1 2/5, fin origin close behind
base of last dorsal ray; caudal 4 to
4 1/3 in rest of body, lower lobe
longer and fin deeply forked, with
notch at lower rudimentary rays;
pectoral with uppermost ray
reaching caudal base or beyond

and bifid at least for last fifth, other rays 11 and longest reach anal; ventral 2 3/5 to 2 3/4 in body without caudal, reach to or little beyond depressed anal.

Body blackish brown. Iris gray. Front of head all more or less paler than posteriorly. Inside gill opening blackish. Fins more or less whitish.

Atlantic and Pacific Oceans.

42087 U.S.N.M.
Inus. Hist. Nat. Paris 85+114.
Length 165 mm.

42088 U.S.N.M.
Inus. Hist. Nat. Paris 85+113.
Length 158 mm.

3257

57888 U.S.N.M.

Albatross Station 3376.

Length 213 mm. As Bathypterois

pectoralis.

Bodianus cuvieri Bennett, Fishes of Ceylon, 1828-30, pl. 13. Ceylon.

Diagramma cuvieri Playfair, Fishes of Zanzibar, 1866, p. 28 (Zanzibar). — Day, Fishes of India, Suppl., 1888, p. 785; Fauna British India, Fishes, vol. 1, 1889, p. 516. — Thurston, Notes Pearl Fisher. Manaar, 1890, p. 91 (Pamban).

Plectorhynchus cuvieri Bleeker, Atlas Ichth. Ind. Neerl., vol. 8, 1876-77, p. 21 (Java, Sumatra, Batu, Amboina, Banda).

Plectorhinchus cuvier Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 206 (compiled).

Diagramma lessonii Cuvier, Hist. Nat. Poiss., vol. 5, 1830, p. 313. Waigiu. — Lesson, Voy. Coquille, Zool., vol. 2, pt. 1, November 12, 1831, p. 199, pl. 24 (Offack Bay, Waigiu). — Günther, Cat. Fishes Brit. Mus., vol. 1, 1859, p. 329 (Amboina). — Schmeltz, Cat. Mus. Godeffroy, no. 3, 1866, p. 7 (Samoa). — Playfair, Fishes of Zanzibar, 1866, p. 28 (Zanzibar; Aden).

3252

Bathypteroïs ater Gilchrist

Bathypteroïs ater Gilchrist, Marine Invest. South Africa, vol. 4, 1906, p. 167, pl. 49. Off Cape Point, in 900 fathoms. — Barnard, Ann. South African Mus., vol. 21, June 1925, 1925, p. 234, pl. 9, fig. 6 (copied). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, December 1928, p. 26 (compiled).

Depth 5 1/2; head 4 7/8. Snout 3 2/5 in head from snout tip; eye 10 3/4, 3 in snout; maxillary extends 3 eye diameters behind eye, expansion equal to 1 1/2 eye diameters, length 1 3/5 in head from snout tip; interorbital (rather high, 2 1/2,

Scales 63 in lateral line to caudal base and 3 more on latter, 5 above, 4 below.

D. 14, second ray 1 1/10 in total head; adipose fin 4 3/4; A. 8, first ray 1 1/3; least depth of caudal peduncle 2 4/5; caudal 4 1/4 in rest of body; upper lobe little longer and lobes rounded, with notch at lower rudimentary rays; P. 1, 2+8, upper 1 3/5 times body without caudal, bifurcating opposite adipose fin with ~~second upper division~~ aftershaft 1 3/4 in rest of ray, other rays reach middle of body; ventral 3 1/2 in body without caudal, 2 outermost rays little extended and reach middle of anal.

3254

. Dark or dark brown. Head blackish. Length 162.3 mm. (Gilchrist.)

South Africa.

3255

Bathypteroïs atricolor Alcock

Bathypteroïs atricolor Alcock, Journ. Asiatic Soc. Bengal, vol. 65. pt. 2. Oct. 7. 1896 p. 306

Ann. Mag. Nat. Hist., series , vol. , Aug. 1898, p. 146. (

Sea Fisher Indian Mus., 1899, p. 158

(Arabian Sea, near the Laccadives, Maldives, and C. Comorin, 891, 459, 824 fathoms). —

Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p. ( ). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 26 (reference).

Bathypteroïs (Bathypteroïs) atricolor Parr,

Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 30 (Atlantic materials; discussion).

3255

Bathypteroïs atricolor Alcock

Bathypteroïs atricolor Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, Oct. 7, 1896, p. 306. Laccadive Sea, in 891 fathoms; p. 332 (reference); Illustrat. Zool. Investigator, Fishes, pt. 4, 1897, pl. 17, fig. 6; Cat. Deep Sea Fishes Indian Mus., 1899, p. 158 (Arabian Sea, near the Laccadives, Maldives, and C. Comorin, 891, 459, 824 fathoms). — Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p. ( ). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 26 (reference).

Bathypteroïs (Bathypteroïs) atricolor Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 30 (Atlantic materials; discussion).

3256

Bathypterois ventralis Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 256, pl. 55, fig. 1, 2. Lat. 16° & 21° N. Long. 99°106°, in 660 to 680 fathoms (off Western Mexico).

Bathypterois antennatus Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 590, fig. 235. Vicinity of Bird Island, depth 313 to 800 fathoms; vicinity of Kauai, depth 1000 to 1314 fathoms. —

Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p.

Bathypterois atricolor indicus Brauer, Deutsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 144 (380), pl. 11, fig. 1. N. Lat. 1°48'2" E. Long. 45°42'5", in 1644 mm. (off North East Africa.)

3257

Bathypterois atricolor phenax Parr,
Bull. Bingham Oceanogr. Collection,
vol. 3, art. 3, dec. 1928, p. 31. N. Lat. 21°
16' W. Long. 71°18', in 900 to 945 fathoms.
Bathypterois longifilis (not Günther
Fowler, Mem. Bishop Mus., vol. 10, 1928,
p. 66 (on Gilbert).

Depth 6 7/8 to 7 1/2; head 3 3/4 to
4 3/5, width 2 1/5 to 2 1/3. Snout 2 7/8
to 3 1/8 in head from snout tip;
eye 10 1/2 to 13, 3 1/5 to 4 1/4 in
snout, 4 to 6 1/4 in interorbital;
maxillary extends 2 2/3 to 3 1/2
eye diameters behind eye,
expansion equals 1 1/4 to 2 eye
diameters, length 1 1/2 to 1 3/5 in
head from snout tip; interorbital

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2 1/2 to 2 7/8, low, broadly convex. Gill rakers 14 + 33 or 34, lanceolate, slender, slightly exceed gill filaments or equal 2 2/3 eye diameters.

Scales 47 to 52 in lateral line to caudal base and 3 or 4 more on latter; 5 or 6 above, 8 below, 26 to 30 predorsal forward opposite front of eyes. Scales very caducous, most all fallen. Scales with 28 to 30 circuli basally, more or less complete though fewer apically.

D. II, 10, I to II, 13, I, first branched ray 1 1/5 to 1 1/3 in total head length; adipose fin 3 7/8 to 4 1/8; A. II, 8, I, first

branched ray 1 2/5 to 1 1/2; least depth of caudal peduncle 2 4/5 to 3; caudal 3 to 4 in rest of body, deeply lunate; pectoral with upper ray extending at least far as end of caudal?, with long aftershaft given off little before middle, rest of rays 10 or 11, longest reaching anal fin; ventral 2 1/5 to 3 3/5 in body without caudal, rays 9, extend beyond anal fin in young.

Dark brown to blackish brown. Inside mouth, gill opening and peritoneum blackish. Iris grayish. Pectoral filaments and tips of ventral rays white.

3260

Atlantic, Pacific and Indian
western Pacific
Oceans. Two ~~Philippine~~ specimens
show the adipose fin much more
advanced than Hawaiian. All have a
notch in the profile of the lower
rudimentary caudal rays.

2746.

D. 5439. Hermana Mayor Light, S.
33° E., 12.6 miles (N. 15° 58' 15" E. 119° 40' 20"),
west coast of Luzon. In 940 fathoms.
May 9, 1909. Length 210 mm.

4231. D. 5655. Cape Tabalo, N. 7° E.,
13 miles (S. 3° 34' 10" E. 120° 50' 30"), Gulf
of Boni. In 608 fathoms. December 18, 1909.
Length 183 mm.

D. 5615. Tifore Island (C.) N. 40° W.,
35 miles (N. 0° 32' 30" E. 126° 31' 30"),
Molucca Passage. In 1021 fathoms.
November 22, 1909. Length 191 mm.

51640 U.S.N.M.
Vicinity Bird Island, Hawaii.
Albatross Station 4151.
Length 165 mm. Type of Bathypteroi
antennatus.

57887 U.S.N.M.
Gulf of Panama. Albatross Station
3418.
Length 132 mm.

3262

Bathypteroïs longipes Günther

Bathypteroïs longipes Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 184. Off east coast of South America, in 2650 fathoms; Rep. Voy. Challenger, vol. 22, 188 , p. 188, pl. 48, fig. A (types). — Goode and Bean, Oceanic Ichth., 1895, p. 66, fig. 76 (Atlantic specimens, 539 to 955 fathoms). — Parr, Bull. Bingham — Murray and Hjort, Depths of the Ocean, 1912, p. 396 (N. 34° 59' W. 33° 1', 2615 to 2865 meters).

Nat. Hist., series 5, vol. 2, 1878, p. 184. Middle of South Pacific, in 2550 fathoms, Rep. Voy. Challenger, vol. 22, 1887, p. 188, pl. 26, fig. B (type). — Goode and Bean, Oceanic Ichth.,

3262

Bathypterois longipes Günther

Bathypterois longipes Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 184. Off east coast of South America, in 2650 fathoms; Rep. Voy. Challenger, vol. 22, 1888, p. 188, pl. 48, fig. a (types). — Goode and Bean, Oceanic Ichth., 1895, p. 66, fig. 76 (Atlantic specimens, 539 to 955 fathoms). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 26 (compiled).

Bathypterois longicauda Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 184. Middle of South Pacific, in 2550 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 188, pl. 26, fig. B (type). — Goode and Bean, Oceanic Ichth.,

3263

1895, p. 64 (reference).

Bathypterois longifilis (not Günther)

Fowler, Mem. Bishop Mus., vol. 10, 1928,

p. 66 (part).

Depth 7 1/4 to 9; head 4 1/4 to 5,
width 2 1/10 to 2 1/5. Snout 3 to 3 1/2
in head from upper jaw tip; eye
8 to 9 1/2, 1 4/5 to 6 in snout, 2 4/5 to
3 3/4 in interorbital; maxillary
extends 5 eye diameters behind
eye, expansion equals 2 eye diameters,
length 1 1/2 to 1 4/5 in head from
upper jaw tip; interorbital 2 4/5
to 3, low, broadly convex. Gill
rakers 11 + 30, finely lanceolate,
4 times eye and twice gill
filaments.

The Academy of Natural Sciences
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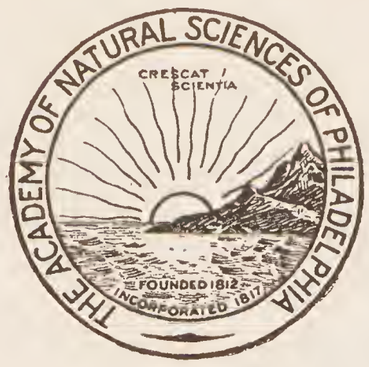

LOGAN SQUARE
PHILADELPHIA, PA.

Scales 55 to 60 in lateral line to caudal base and 3 or 4 more on latter; 6 above, 7 or 8 below, 30 predorsal forward opposite eyes. Scales very caducous, most all fallen. Scales with 45 circuli basally, usually obsolete apically.

D. II, 12 or II, 13, I, first branched ray 1 1/8 to 1 1/5 in total head; adipose fin 7 3/4 to 8 1/2, origin midway between caudal base and base of last dorsal ray; A. I, 8, first branched ray 1 1/4; least depth of caudal peduncle 3 3/4; caudal 3 1/4 to 3 2/3 in rest of body; pectoral rays 2 - 7 or 8, uppermost

reaches caudal tip, gives off aftershaft last 2/3 its length, other rays reach far as dorsal fin origin; ventral rays 8, first or simple ray 2 4/5 to 2 7/8 in combined head and body to caudal base.

Blackish broun. Iris gray. Inside gill opening white. Head anteriorly brownish, opercle blackish. Fins white.

Atlantic and Pacific Oceans.

47614 U.S.N.M. N.25°30'W. 84°
35-1. 3 m 539 fathoms. Blake
Station CXCI. Length 59 mm.

31804 U.S.N.M. N. 39° W. 72°.
Fish Hawk Station .
Length 76 mm.

35635 U.S.N.M.
Albatross Station 2225.
Length 209 mm.

→

October 1907, p. 654 (Mozambique).
Mesoprion zebra Kner, Reise Novara,
Fische, 1865, p. 30 (Java; Singapore).
— Klunzinger, Fische Roth. Meer., 1884,
p. 11.
Diacope siamensis Valenciennes, Hist. Nat.
Poiss., vol. 6, 1830, p. 524. Gulf of Siam.

Depth 2 ~~1/4~~ to 2 1/4; head 2 2/5 to 2 1/2,
width 2 1/4 to 2 3/5. Snout 2 to 2 3/5 in
head from snout tip; eye 4 to 5 1/5, 1 2/5
to 2 1/5 in snout, greater than interorbital,
maxillary reaches eye, expansion 1 1/2 to
2 in eye, ~~greater than interorbital;~~
~~maxillary reaches eye~~, length 2 2/3 to 2 4/5
in head from snout tip; narrow band
of villiform teeth in each jaw, without outer
row of sharp conic teeth, little enlarged
in front and several on each side
of mandible; broad angular band of
villiform teeth on vomer, obsolete

3267

Bathypteroïs quadrifilis (Günther

Bathypteroïs quadrifilis Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 184. Off coast of Brazil, 770 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 189, pl. 33, fig. B (types; off Brazil, 500 to 770 fathoms). — Goode and Bean, Oceanic Ichth., 1895, p. 65, pl. 20, fig. 75 (Blake Station XCVIII off St. Vincent, 513 fathoms; Albatross Stations 2385 and 2117, 683 to 740 fathoms). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 545 (compiled). — Regan, Ann. Mag. Nat. Hist., ser. 8, vol. 7, 1911, p. ( ). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, dec. 1928, p. 27 (compiled).

3268

Depth 6 3/4 to 7 1/5; head 3 1/2 to 4 3/4, width 2. Snout 3 to 3 3/5 in head from snout tip; eye 8 1/3 to 10, 2 1/3 to 3 1/3 in snout, 3 1/2 to 4 1/5 in interorbital; maxillary extends 1 1/2 to 2 eye diameters behind eye, expansion 3/4 to 1 eye diameter, length 1 1/2 to 2 1/4 in head from snout tip; interorbital 2 to 2 2/3, low, slightly convex. Gill rakers 13 + 31, finely lanceolate, slender, twice gill filaments, equal 2 1/4 eye diameters.

Scales 50 to 60 in lateral line to caudal base and 3 or 4 more on latter; 6 above, 7 or 8 below, 27 or 28 predorsal forward to eye. Scales very caducous,

most all fallen.

D. II, 12, I, first branched ray 1 1/5? to 1 2/5 in total head length; adipose fin 5, inserted midway between hind dorsal ray base and caudal base; A. I, 8, I, first branched ray 1 2/5 to 2 1/5; caudal 1 1/8? to 1 1/5, emarginate; least depth of caudal peduncle 3 to 3 2/5; pectoral rays 2 - 9, uppermost reaches middle of caudal, gives off aftershaft at first fourth, of other rays lowest equally long as first; ventral rays 9, length 3 1/5 to 3 2/5 in combined head and trunk to caudal base.

Body dark brown. Inside gill

opening dusky. Iris grayish. Fins whitish.

Atlantic Ocean.

34963 U.S.N.M.

Albatross Station 2117. In 683 fathoms.

Length 150 mm.

44326 U.S.N.M.

Albatross Station 2385. In 740 fathoms.

Length 150 mm.

Bathypteroïs filiferus Gilchrist

Bathypteroïs filiferus Gilchrist, Marine Investig. South Africa, vol. 4, 1906, p. 166, pl. 48. Off Cape Point, in 100 to 600 fathoms. — Gilchrist and Von Bonde, Fisher. Marine Biolog. Surv. South Africa, Rep. No. 3, 1922 (1924), no. 7, p. 7 (off Cape Point and Table Bay, 880 to 1400 fathoms). — Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 233 (type). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 27 (compiled).

Benthopteroïs (Bathypteroïs) filiferus Roule, Résult. Camp. Sci. Monaco, fascic. 52, 1919, p. 37 (comparison).

Depth 6 1/8; head 3 3/4 to 4. Snout 2 1/2 to 2 2/3
in head from snout tip; eye 1/2, 4
in snout; maxillary extends 3 2/3 eye
diameters behind eye, expansion equals
1 1/2 eye diameters, length 1 1/2 in
head from snout tip; interorbital
2 1/2 to 2 2/3, moderately high.

Scales 55 to 57 in lateral line;
7 above, 5? below.

D. II, 13, II, first branched ray 1 1/5
in total head; adipose fin 9; A.
9, first ray 1 1/10; least depth of
caudal peduncle 3 1/5; P. rays 2+11

to 13, uppermost ray 1 3/4 in combined head and body without caudal, forbed opposite adipose fin and aftershaft 1 3/4 in total head length; ventral 1 3/4 in body without caudal, nearly reaches caudal base, 2 outermost rays little prolonged and ends dilated; caudal 2 4/5, 2 lowest rays little prolonged and ends dilated, fin without lower notch.

Brownish. Gill opening purplish.

Length 300 mm. (Gilchrist, Barnard.)
Off South Africa.

Bathypteroix insularum Alcock

Bathypteroix insularum Alcock, Ann. Mag. Nat. Hist., series 6, vol. 10, 1892, p. 356. Laccadive Sea (N. Lat. 14°35'15" E. Long. 72°02'37), in 1140 fathoms. — Goode and Bean, Oceanic Ichth., 1895, pp. 64, 511 (reference). — Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 332 (reference); Illustrat. Zool. Investigator Cat. Deep Sea Fishes Indian Mus., 1899, p. 158 (Arabian Sea, off the Laccadive Islands, 1140 fathoms).

Bathypteroix capensis Gilchrist and Von Bonde, Fisher. Marine Biol. Surv. South Africa, Rep. no. 3, 1922 (1924), no. 7, p. 8, pl. 2, fig. 1. Off Table Bay, 1220 fathoms. — Barnard, Ann. South African Inst., vol. 21, pt. 1, June 1925, p. 233 (type).

3274

Bathypteroïs insularum Alcock

Bathypteroïs insularum Alcock, Ann. Mag. Nat. Hist., series 6, vol. 10, 1892, p. 356. Laccadive Sea (N. Lat. 14°35'15" E. Long. 72°02'37), in 1140 fathoms. — Goode and Bean, Oceanic Ichth., 1895, pp. 64, 511 (reference). — Alcock, Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 332 (reference); Illustrat. Zool. Investigator, Fishes, pt. 7, 1900, pl. 32, fig. 1. — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 27 (compiled).

Bathypteroïs capensis Gilchrist and Von Bonde, Fisher. Marine Biol. Surv. South Africa, Rep. no. 3, 1922 (1924), no. 7, p. 8, pl. 2, fig. 1. Off Table Bay, 1220 fathoms. — Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 233 (type).

depth 7 3/4; head 3 7/8. Snout 3 in head from snout tip; eye 13, 4 in snout; maxillary extends 3 1/2 eye diameters behing eye, expansion equals 1 1/2 eye diameters, length 1 1/2 in head from snout tip; interorbital slightly less than snout, moderately high.

Scales 49 in lateral line to caudal base and 3 more on latter; 7 above, 7 below.

D. I, 11, I, first branched ray 1 2/3 in total head length; adipose fin 5 2/3;

D. I, 7, I, first branched ray 1 3/4; least depth of caudal peduncle 3 2/3; caudal 2 2/3 in rest of body, lower 2 rays little extended, fin emarginate, no lower notch; pectoral rays 2 + 12 or 13, second of upper group prolonged far as adipose fin, forked just behind depressed dorsal, uppermost ray about 1/3 of second ray, rays of lower group reaching vent; ventral reaches back opposite adipose fin, 2 outermost rays prolonged.

Black. Fins hyaline gray. Length 140 mm. (Alcock.)

Arabian Sea and off South Africa.

Bathypteroïs longifilis Günther

Bathypteroïs longifilis Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 183. Near Kermadec Island, in 520 to 630 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 185, pl. 47, fig. B, pl. 48, fig. B (types). — Goode and Bean, Oceanic Ichth., 1895, p. 64 (reference). — Regan, Ann. Mag. Nat. Hist., series 8, vol. 7, 1911, p. 128 (diagnosis in key). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 27 (compiled). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 66 (compiled; part).

Depth 6 to 6 1/2; head 3 4/5 to 3 7/8, width 2 1/3 to 3. Snout 2 9/10 to 3 1/8 in head from snout tip; eye 19 to 20, 6 to 6 1/2 in snout, 7 to 8 in interorbital; maxillary extends 5 eye diameters behind eye, expansion equals 2 to 2 1/4 eye diameters, length 1 1/2 to 1 3/4 in head from snout tip; interorbital 2 7/8 to 3 1/4, moderately high. Gill rakers 12+30, slender, needle shaped, 1/4 of head.

Scales 50 to 59 in lateral line to caudal base and 3 more on latter;

6 above, 8 below.

D. II, 11, I, first branched ray
1 1/3 to 1 2/5 in total head length;
adipose fin (sometimes absent) 4 7/8;
A. I, 8, I, first branched ray 1 2/5 to 2 1/3;
pectoral 3 + 13, uppermost prolonged,
forked midway between adipose fin
and caudal base, aftershaft slightly
shorter, lower group of rays reach
adipose fin; ventral reaches middle
of depressed anal, first 2 rays
sometimes little prolonged and dilated
terminally.
caudal 1 2/5 or sometimes lower ray prolonged,
lower notch absent; least depth of caudal
peduncle 3 1/2 to 3 2/3 in total head;

Light greenish with narrow black margins to scales. Sides of head, abdomen, inside mouth and abdominal cavity black. Vertical and ventral fins black, with lighter edges. Pectorals colorless. Length 330 mm. (Günther.

Western Pacific.

3261

Bathypteroïs guentheri Alcock

Bathypteroïs guentheri Alcock, Ann. Mag. Nat. Hist., series 6, vol. 4, 1889, p. 450. Andaman Sea 7½ miles east north Cinque Island, in 490 fathoms; series 6, vol. 8, Aug. 1891, p. 129 (Bay of Bengal, 561 fathoms); Illustrat. Zool. Investigator, Fishes, pt. 1, 1892, pl. 7, fig. 6; Journ. Asiatic Soc. Bengal, vol. 65, pt. 2, 1896, p. 332 (off coasts of Andaman Islands, 490 to 561 fathoms). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 25 (compiled).

Bathypteroïs günthери Goode and Bean, Oceanic Ichth., 1895, p. 64 (reference). — Alcock, Cat. Deep Sea Fishes Indian Mus., 1899, p. 157 (Andaman Sea, 490 fathoms; Bay

of Bengal, off Andaman Islands, 561 fathoms;
Arabian Sea, off the Laccadives and Maldives,
636 and 719 fathoms).

Bathypterois guentheri Goode and Bean,
Oceanic Ichth., 1895, p. 511 (reference).

Benthopterois guentheri Regan, Ann. Mag. Nat.
Hist., series 8, vol. 17, 1916, p.

Benthopterois guentheri Roule, Résult. Camp.
Sci. Monaco, fascic. 52, 1919, p. 37 (comparison).

Depth 5 2/5; head 3 1/2. Snout
3 2/3 in head from snout tip; eye 4 4,
6 3/4 in snout; maxillary extends
expansion equals 1 1/2 eye diameters,
7 1/4 eye diameters behind eye, length
1 3/5 in head from snout tip; interorbital
moderately high, nearly flat from side to side.

3283

Gill rakers numerous, close set, long, bristle like.

Scales 55 in median lateral series, 14 transversely.

D. I, 11, first branched ray 1 1/3 in total head length; adipose fin 5 7/8; A. 10, I, first ray 2; least depth of caudal peduncle 3 2/5; caudal 1 1/2 in rest of body, widely forked and lower ray greatly extended without lower notch with bifurcate end; P. 1 1/3, rays 2, 6 + 5, upper 2 rays prolonged to caudal base, lower 5 rays subequal

and reach adipose fin; ventral greatly prolonged, reaches beyond caudal base, length 1⅙ in body without caudal.

Dark brown, with 2 broad transverse white bands, 1 just before dorsal, other near middle of tail. Large opaque white 3 lobed body shows through bones of crown of head and snout. White streaks along mucous canal of mandible. Caudal white, other fins blacks except their prolonged white rays with black tips. Length 255 mm. without prolonged caudal ray.

(Alcock.)

Arabian and Andaman Seas and Bengal Bay.

3285

Bathypteroïs viridensis (Roule)

Benoepteroïs viridensis Roule, Bull. Inst. Océanogr. Monaco, No. 320, 1916, p. 13. Ile de Sal, Cape Verde, 1477 meters; Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 35, pl. 1, fig. 3 (type locality N. 16° 34' W. 23° 3' 15").

Bathypteroïs viridensis Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 25 (reference).

Bathypteroïs (Hemipteroïs) viridensis Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 27, fig. 2 (N. 23° 54' W. 77° 9'; 710 to 720 fathoms).

Depth 5 2/5; head 3 3/5. Snout
2 7/8 in head (from snout tip); eye 15 1/4, 5 1/4 in
snout; maxillary extends 5 eye diameters
behind eye, expansion equals 2 eye
diameters, length 1 1/3 in head from
snout tip; interorbital moderately
high.

Scales 41 in lateral line to caudal
base and 3 more on latter; 6 above, 7
below.

D. $\underline{\underline{I}}$, 11, first branched ray 1 1/4 in
total
head; adipose fin 4 1/6; A. $\underline{\underline{I}}$, 8,
first branched ray 1 3/4; least depth

of caudal peduncle 3; caudal 1 4/5 in rest of body, deeply emarginate, lower 2 rays prolonged, dilated at tips and lower with bifurcate tip; pectoral rays 5 + 5, uppermost 3 bifurcate, first reaching midway in postdorsal space to adipose fin; ventral nearly twice long as pectoral or 1 1/4 in body without caudal, lowest 2 extended beyond caudal base and tips dilated.

Uniform grayish blue, tinted with russet on head, muzzle and cheeks. Fins clear russett. Length 330 mm. (Roule.)

Atlantic Ocean.

3288

Genus Bathymicrops Murray and Hjort

Bathymicrops Murray and Hjort,
Depths of the Ocean, 1912, pp. 416, 686.
Type Bathymicrops regis Murray and
Hjort, monotypic.

Body elongate, very slender, tapering
back from head with rather long
narrow caudal peduncle. Head depressed.
Maxillary very long, but little shorter
than head. Mandible slightly protruded.
Whole head covered with scales, which
only faintly visible through scales as
minute black-cloth. Scales rather small.
Dorsal premedian, entirely before
postmedian anal. No adipose fin.
Caudal triangular. Pectoral inserted
rather high. Ventral damaged, midway
between pectoral and dorsal.

3289

Bathymicrops regis Murray and Hjort

Bathymicrops regis Murray and Hjort,

Depths of the Ocean, 1912, pp. 396, 416, p. 686, fig. 501, d (head). fig. 305, ^ N. 28°54' W. 24°14', west of Canaries. — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 23 (reference).

Depth 13 1/2; head 5 1/2. Head attenuated in profile; maxillary 1 1/5 in head from snout tip, slender; top of head apparently convex.

Scales 75? from above gill opening in median lateral series, 7 transversely at dorsal origin.

D. II, 9, first height 1 2/5 in head; total

3290

A. 14, first ray 2; caudal 1 2/5, slightly concave at hind edge; least depth of caudal peduncle 6 1/4; pectoral 2 7/8; ventral 1 4/5.

Uniform, with 7 slightly darker transverse obscure narrow bars or blotches. Fins paler than body

Length 111 mm. (Murray and Hjort.)

North Atlantic.

3291

Genus Ipnops Günther

Ipnops Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 186. Type Ipnops murrayi Günther, monotypic.

Body elongate, subcylindrical. Head depressed. Snout wide, long, spatulate. No eye. Jaws with narrow bands of villiform teeth. Palate toothless. Whole upper surface with pair of large, transparent, thin, membrane bones, each covering luminous organ. Nostrils rudimentary. Gill rakers long, rather numerous. No pseudobranchiae. Branchiostegals 10. No air bladder. No pyloric

appendages. Bones of head well ossified. Scales large, thin, deciduous. Dorsal premedian. No adipose fin. Anal postmedian, moderate. Caudal triangular. Pectoral inserted medianly, on side. Ventral inserted midway between pectoral and dorsal.

Analysis of species

a. Scales 55 in lateral line; A. 13 — murrayi.

a.² Scales 59 or 90 in lateral line; A. 17 or 18. — agassizii.

Ipnops murrayi Günther

Ipnops murrayi Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 187. South Atlantic, in 1600 to 1900 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 191, pl. 49, fig. B (type; near Tristan da Cunha; north of Celebes; 1900 to 2150 fathoms). — Moseley, Rep. Voy. Challenger, vol. 22, Append. A., 1887, p. 269, pls. 67 and 68 (phosphorescent organ of head). — Goode and Bean, Oceanic Ichth., 1895, p. 67, figs. 67-68 (off Cuba and Bermuda, 755 to 1507 fathoms). — L. Brauer, Deutsch. — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 547 (compiled). 1906, p. 500 (reference). — Barnard, Marine Invest. South Africa, vol. 4, 1908, p. 166 (off

Ipnops murrayi Günther

Ipnops murrayi Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p. 187. South Atlantic, in 1600 to 1900 fathoms; Rep. Voy. Challenger, vol. 22, 1887, p. 191, pl. 49, fig. B (type; near Tristan da Cunha; north of Celebes; 1900 to 2150 fathoms). — Moseley, Rep. Voy. Challenger, vol. 22, Append. A., 1887, p. 269, pls. 67 and 68 (phosphorescent organ of head). — Goode and Bean, Oceanic Ichth., 1895, p. 67, figs. 67-68 (off Cuba and Bequia, 755 to 1507 fathoms). L. Bruun, Dentsch. Tiefsee Exped. Valdivia, vol. 15, Tiefsee-Fische, 1906, p. 380 (reference). — Gilchrist, Marine Invest. South Africa, vol. 4, 1908, p. 166 (off

~~Ipnops~~ murrayi Günther

~~Ipnops~~ Günther, Ann. Mag. Nat. Hist., series 5, vol. 2, 1878, p.

Cape Point, 800 to 900 fathoms). — Weber and Beaufort, Fishes Indo Austral. Archipelago, vol. 2, 1913, p. 179 (compiled). — Barnard, Ann. South African Mus., vol. 21, pt. 1, June 1925, p. 231 (compiled). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 23 (compiled).

Depth 9; head 5 1/8, width 2.. Maxillary 1 2/3 in head from snout tip; interorbital 2, broadly convex. Gill rakers 5+22, finely lanceolate, greater than gill filaments or 5 in head from snout tip.

Scales 50 in lateral line to caudal base; 6 transversely from

dorsal origin; 20 predorsal. Scales very caducous, most all fallen.

D. II, 8, first branched ray 1 1/6 in total head length; A. III, 11, first branched ray 2 1/5; caudal 2 ?, broken, slightly emarginate behind; least depth of caudal peduncle 5 1/2; pectoral 1 1/3; ventral 1 2/5.

Dark brown. Luminous organ on top of head grayish. Opercles blackish. Fins whitish.

Atlantic Ocean.

U.S.N.M. N. 24° 36' W. 84° 5'. In 955 fathoms. Blake Station CCXXXIII. Length 139 mm.

Ipnops agassizii (Garman).

Ipnops agassizii Garman, Mem. Mus. Comp. Zool., vol. 24, 1899, p. 259, pl. 44, figs. 2-2a. N. 2°34' W. 92°6', 1360 fathoms, off Galapagos Islands. — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, dec. 1928, p. 24 (reference).

Depth 13 1/2; head 5 2/5, width 1 7/8. Maxillary 1 2/3 in head from snout tip; interorbital 1 7/8, broadly convex. Gill rakers 3 + 20, finely lanceolate, greater than gill filaments or 4 1/8 in head from snout tip.

Scales 53 in ~~median~~ lateral line to caudal base, 6 transversely

Chauliodus sloanei Regan and Trewavas, Danish Dana Exped. Oceanogr. Rep., No. 5, May 30, 1929, p. 32, fig. 24 (Mediterranean, Atlantic, Caribbean Sea, Japan, ?Australia).

at dorsal origin, 20 predorsal. Scales very caducous most all having fallen.

D. I, 6, third branched ray 1 1/5 in total head length; A. III, 15, I, rays all broken; caudal lost; least depth of caudal peduncle 5; pectoral 2 1/5?; ventral 2?

Dusky brown to blackish.

Luminous organs on top of head grayish. Opercles blackish. Fins pale brownish.

3298.

5-4616 U.S.N.M.

Off Galapagos Islands. Albatross.

Collection 3413. April 5, 1891.

Length, without caudal, 132 mm.

3299

Genus Paralepis Oken

Paralepis Oken, Isis, 1817, p. 1782. (Ex Cuvier, Règne Animal., vol. 2, 1817, p. 289.)

Type Coregone paralepis (Risso) Cuvier = Paralepis coregonoides Risso, virtually tautotypic.

Nympro ptopterurus (Cocco) Bonaparte, Cat. Metod. Pisc. Europ., 1846, p. 35. Atypic.

Nymproptopterurus (Cocco) Facciola, Natural. Siciliana, vol. 5, 1885, pp. 14, 147. Atypic.

3300

Prymnothonus Richardson, Ichth. Voy. Erebus and Terror, 1844-48, p. 51. Type Prymnothonus hookeri Richardson, monotypic.

Arctozenus Gill, Proc. Acad. Nat. Sci. Philadelphia, 1865, p. 188. Type Paralepis borealis Reinhardt, orthotypic.

→ Notolepis Dollo, Proc. Roy. Soc. Edinburgh, vol. 27, 1906-1907, p. . . Type Sudis coatsi Dollo, monotypic.

3300a

Genus Lestidium Gilbert

Lestidium Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 607. Type Lestidium nudum Gilbert, monotypic.

Lestidiops Hubbs, Univers. California Publ. Zool., vol. 16, no. 13, 1916, p. 154. Type Lestidiops sphyraenopsis Hubbs, orthotypic.

Bathylaudis Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 41. Type Paralepis speciosus Bellotti, monotypic.

Body elongate, compressed. Head compressed, attenuated. Eye large. Mouth widely cleft, lower jaw protruding. Maxillary closely joined to premaxillary, not protractile, long, slender. Teeth round, slender, unequal, with smooth edges, some on palatines and in mandible rather enlarged, uniserial on premaxillaries, mandible, palatines and pterygoids. Palatine teeth at least partly rounded, slender, like those of mandible. Opercle with thin bones. Gill membranes

separate, free from isthmus. Gill rakers short, spine like. Pseudobranchiae well developed. Branchiostegals 7. No air vessel. No pyloric coeca. Scales deciduous, largest in lateral line. Dorsal rays 9 to 12, postmedian, short. Adipose fin small, far back. Anal elongate, far posterior or at end of tail. Caudal emarginate. Pectoral weak and feeble in young, better developed with age, low. Ventral small, inserted below or immediately before or behind dorsal.

3303

Analysis of species

a. Large teeth in lower jaw comparatively short or missing with age; preanal length more than 2/3 of fish without caudal.

b. Small teeth in premaxillary with age close fitting with same slight interval between each; openings of scales in lateral line situated near upper and lower scale edges (except speciosus).

c. Anal 30 to 34; pectoral 11 to 13; vertebral 78 to 85; space between adipose fin and hypural .3 to .5 total length without caudal. rissoi.

c.2 Anal 23 to 25; pectoral 14 to 16; vertebral 67 to 74; space between adipose fin and hypural .7 to .11 total length without caudal.

d. Each premaxillary with but single large tooth in front; longest of

large teeth in mandible (missing with age) to less than .3 of snout.

e.' Maxillary reaches 1/4 to eye. coregonoides.

e.² Maxillary reaches eye. ringens.

d.² Each premaxillary with several fairly large teeth in front, like large lower teeth, length .5 of snout.

f.' Snout 2 1/2 in head; peritoneal pigmented section 7 or 8. speciosus.

f.² Snout 2 3/5 to 3 in head; peritoneal pigmented section 10. brevirostris.

b.² Small teeth in premaxillaries with age in pairs with fairly large intervals alternating with quite small ones; openings of scales in lateral line near horizontal median line of scales, at comparatively slight distance from one another. brevis.

a.² Large lower teeth long, .7 to .11 of snout length; preanal length little less than 3/5 of total without caudal.

g.' Anal rays 27 to 34.

h.' Ventral inserted before dorsal rat space equals .6 to .9 of total without caudal.

i.' Dorsal base .4 of total without caudal, rays 11; vent almost below dorsal origin.

j.' Head less than 5 without caudal; vertebrae 88 to 92; pectoral 11. sphyraenoides.

j.² Head more than 5 with caudal; vertebrae 78 to 84; pectoral 12 or 13. pseudosphyraenoides.

i.² Dorsal base 2.5 of total length without caudal, rays 9 to 11; vent before dorsal space equal to .4 of total without caudal.

k.¹ Snout 2 to 2 ½ in head.

l.¹ Anal 28; snout 2 ½. affinis.

l.² Anal 25 or 26; snout 2. elongatus.

l.³ Anal 28 to 30; snout 2. pacificus.

k.² Snout less than 2 in head.

m.¹ Anal 31. nudus.

m.² Anal 36 to 38. philippinus.

h.² Ventral inserted below fore most part of dorsal. thermophilus.

g.² Anal rays 42 to 44.

n.¹ Head 6 1/6; eye 5. intermedius.

n.² Head 5 to 5 1/8; eye 6 1/3. japonicus.

3307

Paralepis risso Bonaparte

Paralepis risso Bonaparte, Icnogr. Fauna Italica, vol. 3, (pt. 1, Pesci,) fasc. 29, 1840, no pagination, [pl., fig.]. Italy. — Bellotti, Atti Soc. Ital. Sci. Nat. Milano, vol. 33, 1891, p. 138 (compiled); vol. 34, 1892, p. 34 (reference).

Paralepis rissoi Lütken, Vidensk. Medd. Nat. Foren. Kobenhavn, ser. 5, vol. 3, 1891 (1892), p. 226 ( ). — Carus, Prodr. Faun. Medit., vol. 2, 1893, p. 567 (compiled). — Vanzo, R. Com. Talass. Ital. Venice, Mem. 62, 1917, p. ( ). — Ege, Vidensk. Medd. Nat. Foren. Kobenhavn, vol. 69, 1918, p. 243 ( );

3308

Rep. Danish Oceanogr. Exped. Medit.,
vol. 2, A. 13, 1930, p. 10, figs. 1–2, p. 101,
fig. 26 (North Atlantic, Mediterranean).

Sudis rissoi Parr, Bull. Bingham Oceanogr.
Coll., vol. 3, art. 3, Dec. 1928, p. (35) 38.
(note).

Sudis sudis rissoi Parr, Bull. Bingham
Oceanogr. Coll., vol. 3, art. 3, Dec. 1928, p. 40
(reference).

Paralepis coregonoides (not Risso) Cuvier,
Hist. Nat. Poiss., vol. 3, 1829, p. 357 (? not
pl. 67) (part). — Bonaparte, Fauna Italica,
vol. 3, Pesci pt. 1, fasc. 29, 1840, no
pagination., pl., fig. 1 (not diagnosis).
— Bellotti, Atti Soc. (Sci. Stal.) Nat.

Milano, vol. 20, 1877, p. 57 ( ).—

Vinciguerra, Ann. Mus. Civ. Stor. Nat.

Genoa, ser. 2, vol. 2, 1885, p. 466 ( ).

— Roule and Angel, Rés. Camp. Sci.

Monaco, vol. 79, 1930, p. 62 (65), pl. 3,

figs. 86 and 87 (fig. 86 named Paralepis

sphyraenoides).

Paralepis coregonoides Swainson, Nat.

Hist. Animals, vol. 2, 1839, p. 242 (on

"Cuv. and Val. 66 [pl. 67 evidently intended]").

Paralepis borealis (not Reinhardt) Kroyer,

Naturh. Tidsskrift., vol. 2, 1846–49

(1847), p. 241. .— Gaimard,

Voy. Scandin. Lapon. Spitz. Feroe,

1842–56 (1847), p. , pl. 16B, fig. 1( ).

— Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 419 (part). — Goode and Bean, Oceanic Ichth., 1895, p. 119, pl. 38, fig. 143 (Western Atlantic; Gulf of St. Lawrence).

Sudis borealis Jordan and Gilbert, Bull. U. S. Nat. Mus., No. 17, 1882, p. 278 (compiled).

Arctozenus borealis Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 601 (compiled).

Paralepis coruscans Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 3, 1880 (1881), p. 411. Port Townsend, Washington.

Sudis coruscans Jordan and Gilbert,

Bull. U. S. Nat. Mus., No. 16, 1882, p. 278 (copied).

Arctozenus coruscans Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 601 (compiled).

Paralepis pseudocoregonoides Sarato, Moniteur des Etrangers, Nice, March 15, 1887, p. . Nice. — Moreau, Hist. Nat. Poiss. France, Suppl., 1891, p. 121 ( ). — ? Collett, Rés. Camp. Sci. Monaco, vol. 10, 1896, p. 117 (N. 47°26'9" E. 9°17'15").

Paralepis bkroyeri Lütken, Vidensk. Medd. Nat. Foren. Kobenhavn, ser. 5, vol. 3, 1891 (1892), p. 222 ( ). — Jensen, Medd. Grönland, vol. 29, 1904, p. 272.

( ). — Jaemundsson, Skrift. Komm. Havunders., No. 5, Kobenhavn, 1908, p. 100 ( ). — Grieg, Bergens Mus. Aarbok, Hr. 6, 1911, p. 28 ( ). — Ege, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 69, 1918, p. 243 ( ). — Nordgård, K. Norske Vidensk. Selsk. Skrift. No. 4, Trondhjem, 1924, p. 4 ( ). — Knipovich, Trans. Institute Sci. Explor. of the North, No. 27, Moscow, 1926, p. 76, fig. 35 ( ). — Jaemundsson, Synopsis Fishes of Iceland, Reykjavik, 1927, p. 44.

3313

Sudis kroyeri Collett, Arch. Math. Naturvidensk. Christiania, vol. 19, hr. 8, 1897, p. 21 ( ); Vidensk. Selsk. Forhandl. Christiania, 1903 (1904), pt. 2, p. 117 ( ). — Norman, Discovery Rep., vol. 2, 1930, p. 318 (S. 33°25' E. 6°31'; 1000 meters; S. 33°20' to S. 33°46' E. 15°18' to 15°8', 625 to 675 meters; S. 2°43'30" W. 00°56'30", 125 to 175 meters).

Sudis rissoi subsp. kröyeri Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, Dec. 1928, p. 39 (compiled).

Paralepis rissoi kröyeri Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 17, figs. 3–4, p. 106 (North Atlantic).

3314

. Paralepis speciosus (not Bellotti)
Pietschmann, Sitzg. Ber. Akad. Wiss.
Wien, Math. naturw. Klasse, vol. 23, pt.
, 1914, p. 440, pl. 6, fig. 3.

Depth 13 or 14; head 4 to 4 1/4, width
6 to 6 1/2. Snout 2 to 2 1/10 in head
from snout tip; eye 6 1/4 to 6 1/2, 3 to
3 1/8 in snout, greater than interorbital;
maxillary reaches 1 1/4 to 1 2/5 in snout,
2 1/2 to 2 2/3 in head from snout tip;
interorbital 8 to 9 1/5, level, depressed
medially; opercle with 8 or 9 radiating
striae. Gill rakers as numerous
close set minute or villiform points;

3315

gill filaments greatly longer or 1 7/8 in eye.

Scales 60 in lateral line, ending over middle of anal.

D. II, 6, first branched ray 5? in total head length; adipose fin 6 3/4; A. IV, 30, first branched ray 3 3/5; caudal 4 2/3, well forked; least depth of caudal peduncle 1 2/3 in eye; pectoral 4 in total head length; ventral 5?

Uniform brownish. Iris neutral gray. Silvery white reflections on opercle. Fins pale or whitish, with dusky tints basally.

Atlantic and Pacific Oceans. Most

of my materials badly preserved, so the above description necessarily imperfect.

27171 U.S.N.M. Straits of Fuca, Washington. Length 232? mm. Type of Paralepis coruscans.

53051 U.S.N.M. N. 32° W. 76°
Albatross Station 2677.
Length 180? to 210? mm. 2 examples.

3 examples U.S.N.M.

Albatross Station 2676.
Length 255 to 295 mm.

3317

Paralepis coregonoides Risso

Paralepis coregonoides Risso, Journ. Phys. Chim. Hist. hat. Paris, vol. 91, July 1920 (Oct.), p. 253. Sea of Nice; Hist. hat. Eur. Mérid., vol. 3, 1826, p. 472, pl. 7, fig. 15 (Nice). — Valenciennes, Hist. hat. Poiss., vol. 7, 1831, p. 510 (Nice; not vol. 3, p. 357). — Bonaparte, Fauna Italia, vol. 3, Pesci, pt. 1, fase. 29, 1840, no pagination (not plate or figure); Cat. Metod. Pesc. Europ., 1846, p. 35— (reference). — Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 418 (compiled). — Canestrini, Fauna Italia, Pesci, 1874, p. 127 (Nice). — Day, Fishes Great Britain,

3318

vol. 2, 1880-84, p. (51) 367 (Polkerris, Cornwall). — Moreau, Hist. Nat. Pois. France, vol. 3, 1881, p. 519, fig. 205 — Bellotti, Atti Soc. Sci. Nat. Milan, vol. , 1891, p. 140 ( ). — Moreau, Hist. Nat. Pois. France, Suppl., 1891, p. 120 ( ). — Bellotti, Atti Soc. Sci. Nat. Milan, vol. 1892, p. ( ). — Lütken, Vidensk. Medd. Nat. Foren. Kobenhavn, 1891 (1892), p. 226 — Collett, Rés. Sci. Camp. Monaco, vol. 10, 1895, p. 119 (note). — Goode and Bean, Oceanic Ichth., 1895, p. 119 (part; not material). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 602

(part, compiled). — Fage, Ann. Inst. Oceanogr. Monaco, vol. 1, no. 7, 1910, p. 16. — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1910, p. 406 (Italy). — Ege, Vidensk. Meddl. Dansk Nat. Foren. Kobenhavn, vol. 69, 1918, p. 245); Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 29 (Mediterranean).

Paralepis coregonoides coregonoides Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 29, figs. 5 to 7, p. 109.

Arctozenus coregonoides Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, dec. 1928, p. 40 (note).

Coregonus maraenula (not Lacépède) Risso, Ichth. Nice, 1810, p. 328.

3320

Paralepis borealis Reinhardt, Vidensk. Selsk. nat. math. Afh. Kobenhavn, vol. 7, 1838, p. 115.

— Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 419 (part). — Lütken, Vidensk. Medd. Naturh. Foren. Kobenhavn, 1891 (1892), p. 227. — Jaemundsson, Skrift. Komm. Havunders. Kobenhavn, No. 5, 1908, p. 99 (part). — Egel, Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 69, 1918, p. 245.

— Jaemundsson, Fisk. Islands, Reykjavik, 1926, p. 394 (part); Synop. Fishes Iceland, 1927, p. 44 (part); Vidensk. Medd. Dansk Naturh. Foren. Kobenhavn, vol. 84, 1927, p. 177 (part).

Paralepis coregonoides borealis Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 37, figs. 8–10, p. 114, fig. 27.

Paralepis cuvieri Bonaparte, Fauna Italica, vol. 3, Pesci pt. 1, fasc. 29, 1840, no pagination (name) on Cuvier). — Bellotti, Atti Soc. Ital. Sci. Nat. Milan, vol. 20, 1877, pp. 55, 57( ). — Giglioli, Elenco Fauna Ital. Pesci, 1880, p. . — Vinciguerra, Ann. Mus. Civ. Stor. Nat. Genova, ser. 2, vol. 2, 1885, p. 466( ). — Carus, Prodr. Fauna Medit., vol. 2, 1892, p. 567 (compiled).

Paralepis barracudina Fowler, and Phillips, Proc. Acad. Nat. Sci. Philadelphia, 1910,

3322

p. 403, fig. Corson's Inlet, New Jersey.

— Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 571 (type); Proc. Biol. Soc. Washington, vol. 33, Dec. 30, 1920, p. 149 (type); Copeia, No. 170, April 30, 1929, p. 22 (note).

Paralepis pseudocoregonoides (not Herato) Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 571 (Bonaparte Italian materials).

Depth 10; head 3 7/8; width 4 7/8. Snout 2 2/5 in head from snout tip; eye 5 3/5, 2 1/3 in snout, greatly exceeds interorbital; maxillary reaches 1/4 to eye, length 3 in head from snout tip;

interorbital 7/8, level, depressed medially. Gill rakers 7+22, very slender, fine, lanceolate, 1/2 of gill filaments, which 1/2 of eye.

Scales 57 in lateral line extend until opposite middle of anal. Scales very caducous, most all fallen.

D. II, 8, I, first branched ray 3 1/4 in total head length; adipose fin 5; A. III, 22, first branched ray 3 7/8; caudal damaged; least depth of caudal peduncle 1 1/4 in eye; pectoral 2 3/4 in head; ventral 4, inserted little behind dorsal origin.

Largely dull brown, shaded with

deeper hues. Iris silvery gray. Side of head and opercle silvery white. Dusky brown on top of head and snout. Fins brownish white.

Atlantic Ocean.

4934 U.S.N.M. Nice. M. Bellotti. Length 188 mm.

33480 U.S.N.M.

Albatross Station 2067. Length 41 mm. A very poorly preserved specimen. Lucis borealis.

37627 A.N.S.P. Corson's Inlet, New Jersey. March 27, 1910. Dr. R. J. Phillips. Type of Paralepis barracudina.

3325

Paralepis ringens Jordan and Gilbert

Sudis ringens Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 3, 1880, p. 373. Santa Barbara Channel, California; Bull. U. S. Nat. Mus., No. 16, 1883, p. 277 (copied). — Jordan — Goode and Bean, Oceanic Ichth., 1895, pp. 118, 121 (reference).

Dec. 1928, p. 40 (discussion).

? Sudis jayakari Boulenger, Proc. Zool. Soc. London, 1889, p. 241, fig. (head). Muscat, Arabia.

Depth 16; head 4, width 4 3/4? Snout 2? in head; eye 4 1/2?, 2? in snout, apparently exceeds interorbital;

3325

Paralepis ringens Jordan and Gilbert

Sudis ringens Jordan and Gilbert, Proc. U. S. Nat. Mus., vol. 3, 1880, p. 373. Santa Barbara Channel, California; Bull. U. S. Nat. Mus., No. 16, 1883, p. 277 (copied). — Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 600 (copied). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 40 (discussion).

? Sudis jayakari Boulenger, Proc. Zool. Soc. London, 1889, p. 241, fig. (head). Muscat, Arabia.

Depth 16; head 4, width 4 3/4 ?; snout 2 ? in head; eye 4 1/2 ?, 2 ? in snout, apparently exceeds interorbital;

maxillary reaches eye, about 2?
in head; premaxillary teeth small,
subequal, close set, hooked back
with long slender front canine each
side; lower teeth 10, sharp, slender,
unequal each side, some short, 3 or 4
very long and canine like and near
front also canine each side; long
row of palatine teeth, 1 or 2 front
ones each side besides 1 or 2 others
long, slender, canine like. No gill
rakers; gill filaments little less
than eye.

Scales very large, all now fallen.
About 55? scales (pockets) in lateral

line, which ends opposite middle of anal.

D. 11, fin height 3? in head; A. 25, fin height 3?; caudal 3 1/4?, apparently forked; pectoral damaged; ventral damaged; caudal pedunele very slender, least depth 2/3? of eye.

Light brown, apparently uniform.

Pacific and Indian? Oceans.

The above account of the badly macerated remains of the type, evidently poorly preserved when originally secured.

27401 U.S.N.M. Santa Barbara Channel. From stomach of hake (Merluccius) which found in an albacore (Germo alalunga). Length 140? mm. Type of Sudis ringens, badly broken.

3328

Paralepis speciosus Bellotti

Paralepis speciosus Bellotti, Atti Soc. Ital. Sci. Nat. Milano, vol. 20, 1877, p. 54, fig. — Vinciguerra, Ann. Mus. Civ. Stor. Nat. Genova, ser. 2, vol. 2, 1885, p. 468 ( ). — Moreau, Hist. Nat. Poiss. France, Suppl., 1891, p. 18 ( ). — Bellotti, Atti Soc. Ital. Sci. Nat. Milano, vol. 33, 1891, p. 139 (Messina), vol. 34, 1892, p. 34 (reference). — Goode and Bean, Oceanic Ichth., 1895, p. 118 (reference). — Pietschmann, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. , pt. , 1914, p. 440, pl. 6, fig. 4 (not pl. 6, fig. 3 or pl. 5, fig. 1)

(part; southern Adriatic). — Regan, Brit. Antarctic Terra Nova Exped., Zool., vol. 1, No. 4, 1916, p. 138 (Messina). — Ege, Rep. Danish Oceanogr. Exped., vol. 2, A. 13, 1930, p. 47, figs. 11-12, p. 118, fig. 28 (Mediterranean).

Lestidium (Bathysudis) speciosus Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, Dec. 1928, p. 42 (part).

Paralepis coregonoides (not Risso) Moreau, Hist. Nat. Poiss. France, vol. 3, 1881, p. 518.

Omosudis elongatus (not Brauer) Jugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, p. 18, pl. 1, fig. 6 (part).

depth 7 1/10; head 3 1/3. Snout 2 1/2 in head; eye 4, 1 1/2 in snout; mouth cleft reaches slightly beyond front of orbit, length 2 1/6 in head; interorbital rather low.

D. 11, fin base 5 3/4 in head, origin opposite ventral origin; 3 7/8, adipose fin over bases of last anal rays; A. 26, fin base 1 9/10; caudal evidently forked; least depth of caudal peduncle 7; pectoral 3 3/4; ventral 6 1/5.

Few dark dots on occiput and

along edge of back, also some on myomeres of tail. Peritoneal dark pigment sections 7 or 8. Length 29.6 mm. (Egei.)

Mediterranean.

3332

Paralepis brevirostris (Parr)

Lestidium (Bathysudis) brevirostris speciosum. 1

Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, dec. 1928, p. 43, N. 21°31' W. 71°11, 8000 feet.

Paralepis brevirostris Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 54 (note).

Arctozudis elongatus (not Brauer) Zugmayer, Rés. Camp. Sci. Monaco, vol. 32, 1911, p. 18 (part).

Paralepis speciosus (not Bellotti) Pietschmann, Sitzg. Ber. Akad. Wiss. Wien, Math. naturw. Klasse, vol. , pt. , 1914, p. 440 (part). — Regan,

3333

Brit. Antarctic Terra Novae Exped., Zool., vol. 1, No. 4, 1916, p. 138 (N. 29° 10' W. 33° 36').

Lestidium (Bathysudis) speciosum Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, Dec. 1928, p. 42, fig. 4 (p. 37) (part).

Depth 5 3/5; head 4. Snout 3 1/8 in head from snout tip; eye 3 1/2, 1 1/8 in snout; maxillary reaches little beyond front eye edge though not quite to front pupil edge; length 2 3/4 in head from snout tip; teeth in jaws slender, wide set, some slightly enlarged fangs in front on premaxillaries and dentaries; series

of small teeth on each palatine; interorbital low, apparently level.

D. II, 9, first branched ray 2 9/10 in total head; adipose fin 3 1/4; A. III, 17, first branched ray 2 1/3, origin little nearer base of last anal ray than ventral origin; caudal 1 4/5, forked; least depth of caudal peduncle 5; pectoral 1 9/10; ventral 3 1/3, origin below middle of dorsal base.

Length without caudal 53mm. (Parr.)

North of West Indies.

3335

Paralepis brevis Zugmayer

Paralepis brevis Zugmayer, Bull. Inst. Océanogr. Monaco, no. 193, 1911, p. 4.; Rés. Camp. Sci. Monaco, no. 35, 1911, p. 61, pl. 2, fig. 7 (type from N. 37°11' W. 11°48', 4750 meters). — Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 54, figs. 13-14, p. 120, fig. 29 (type; North Atlantic and Mediterranean).

Paralepis coregonoides (not Risso) Johnson, Ann. Mag. Nat. Hist., ser. , vol. 10, 1862, p. 283 (Madeira). — Goode and Bean, Oceanic Ichth., 1895, p. 119, pl. 39, fig. 149 (wrongly Polyipnus spinosus Günther p. 9) (N. 28°43' W. 87°14'30", 525 fathoms). — Roule and Angel, Rés. Camp. Sci.

Monaco, vol. 79, 1930, p. 62 (part), pl. 3, figs. 81 to 84 (not fig. 80).

Paralepis sphyraenoides (not Risso) Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 418 (Madeira).

Paralepis borealis (not Reinhardt) Saemundsson, Skrift. Komm. Havunders. Kobenhavn, No. 5, 1908 (1909), p. 99 (part); Fiskar Islenska, Reykjavik, 1926, p. 394 (part); Synopsis Fishes Iceland, 1927, p. 44 (part); Videnska. Medd. Dansk mat. Foren. Kobenhavn, vol. 84, 1927, p. 177 (part).

Arctozenus elongatus (not Brauer) Jugmayer, Rés. Camp. Sci. Monaco, vol. 35, 1911, pl. 18 (part).

Sudis bronsoni Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, Dec. 1928, p. 36, fig. 3. N. 22°43' W. 74°23', 8000 feet. — Norman, Discovery Rep., vol. 2, 1930, p. 318 (S. 32°45' W. 8°47', 650 meters; S. 33°25' E. 6°31', 1000 meters).

Depth 7 1/4; head 3 1/2. Snout 2 1/10 in head from snout tip; eye 7, 3 1/4 in snout; mouth cleft reaches 7/8 to eye, length 2 1/4 in head from snout tip; 5 slightly curved fairly large teeth close together at front of each premaxillary and graduated to posterior which largest, then 9 small

teeth and finally 10 saw like teeth with long bases; lower jaw with 3 curved teeth followed by some small teeth with 6 fairly large, straight, erect ones; palatines in front with 3 fairly large teeth followed by 14 smaller; interorbital, apparently little convex.

Scales in lateral line 60.

D. 10, fin height 3 1/2 in total head; adipose fin 4; A. 23, height of front lobe 3 1/2, fin origin little nearer base of last anal ray than

ventral fin origin; caudal 2, little emarginate behind; least depth of caudal peduncle 5 3/4; pectoral 2 1/10; ventral 4 1/10, origin below middle of dorsal base.

Length 360 mm. (Zugmayer, Ege.)

North Atlantic, Mediterranean.

3340

Paralepis sphyraenoides Risso

Paralepis sphyraenoides Risso, Hist. Nat. Eur. Mérid., vol. 3, 1826, p. 473, pl. 7, fig. 16. Nice. — Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 360 (copied). — Valenciennes, Hist. Nat. Canaries, vol. 2, pt. 2, 1836-44, p. 18 (Canaries). — Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 418 (part). — Canestrini, Fauna Italia, Pesc., 1871, p. 2, (Nice; Genoa). — Bellotti, Atti Soc. Sci. Nat. Milano, vol. 20, 1877, pp. 54, 57 ( ). — Moreau, Hist. Nat. Poiss. France, vol. 3, 1881, p. 52 ( ). — Bellotti, Atti Soc. Sci. Nat. Milano, vol. 38, 1891, p. 138, pl. fig. 1 (compiled); vol. 34, 1892, p. 34

(compiled). — Carus, Prodr. Faun. Medit., vol. 2, 1892, p. 567 (compiled). — Lütken, Vidensk. Medd. Nat. Foren. Kobenhavn, 1891 (1892), p. 225 ( ). — Pietschmann, Sitz. Ber. Akad. Wiss. Wien, Math.-naturw. Klasse, vol. , pt. , 1914, p. 445, pl. 5, fig. 1 ( ). — Ege, Vidensk. Medd. Nat. Foren. Kobenhavn, vol. 69, 1918, p. 244 ( ). — Vanzo, Rendic. R. Accad. Lincei, vol. 27, ser. 5, 1918, p. 450 (part; larval). — Vaillant, Rés. Camp. Sci. Monaco, vol. 52, 1919, p. 130 (N. 38°25' W. 20°59'45", surface; off Morocco?, 2480 meters). — Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2,

Ca. 13, 1930, p. 62, figs. 15–16, p. 122, fig. 30 (North Atlantic, Mediterranean).

Sudis sphyraenoides Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, Dec. 1928, p. 36 (note).

depth 11 4/5 to 12 2/3; head 4 7/8 to 5, width 4 to 4 1/10. Snout 2 1/8 in head; eye 4 1/8 to 4 7/8, 2 1/5 to 2 2/5 in snout, greater than interorbital; maxillary 2 2/5 in head, reaches 1 1/8 in snout; maxillary teeth all small, uniform, close set, numerous; 7 teeth on each mandibular ramus at rather long canines; small uniserial teeth on each palatine with at least canine anteriorly; interorbital 6 1/2 to 7 1/8 in head, low, depressed.

Gill rakers as minute, numerous, subequal close set denticles, greatly less than gill rakers, which 2

in eye.

Scales 62 to 67 in lateral line, extending posteriorly opposite middle of anal fin.

D. II, 9, or II, 10, origin near first fourth in space between ventral and anal origins, first branched ray 3 in head; adipose fin 6 1/4 to 6 1/2; A. III, 17 to III, 19, first branched 2 3/4 to 3 1/5; caudal small, damaged, apparently forked; 3 to 3 1/4 ?; ventral 3 1/4 to 3 2/5; least depth of caudal peduncle 6 3/4 to 7.

Pale brownish generally.

3345

Opercles and lower sides of
head with silvery reflections.
Iris silvery gray. Fins whitish.

Atlantic Ocean.

40060 U.S.N.M. Juv. Florence
Museum. Length 140 mm.

49348 U.S.N.M. Juv. M. Bellotti.
Length 148 mm.

3346

Paralepis pseudosphyraenoides Ege

Paralepis pseudosphyraenoides Ege,
Vidensk. Medd. Dansk naturh. Foren.
Kobenhavn, vol. 69, 1918, p. 244.
Rep. Danish Oceanogr. Exped. Medit., vol.
2, A. 13, 1930, pp. 70, 129 (Mediterranean; Atlantic).
fig. 31 (distribution)

Sudis pseudosphyraenoides Parr, Bull.
Bingham Oceanogr. Coll., vol. 3, art. 3, Dec.
1928, p. 36 (note).

Paralepis sphyraenoides (not Risso) Lanzo,
Rendicont. R. Accad. Lincei, vol. 27, ser. 1,
fase. 12, 1918, p. 450 (part), fig. 2. —
Roule and Angel, Rés. Camp. Sci. Monaco,
vol. 79, 1930, p. 67 (part), pl. 3, fig. 85.

3347

Paralepis pseudorphyraenoides thori Ege, Rep. danish Oceanogr. Exped. Medit., vol. 2, A.13, 1930, p. 73, figs. 17-18, p. 129, figs. 31-32. Mediterranean.

Paralepis pseudorphyraenoides danae Ege, Rep. danish Oceanogr. Exped. Medit., vol. 2, A.13, 1930, p. 79, fig. 19, p. 136, fig. 33. Atlantic.

Depth 11 3/4; head 4 4/5. Snout 2 in head from snout tip; eye 4 1/2, 2 1/8 in snout; mouth cleft reaches front of orbit, length from snout tip 2 in head; interorbital very low, apparently level.

D. 11, fin base 4 2/3 in total

head, fin origin slightly before first fourth between ventral and anal origins; adipose fin 4 3/4, over bases of last anal rays; A. 30, fin origin midway between ventral origin and caudal base; caudal forked; least depth of caudal peduncle $\frac{7}{1}$ in total head length; pectoral 4?; ventral 5.

End of muzzle and upper edge of back with fine dark dots. Length 92 mm. (Ege.)

North Atlantic and Mediterranean.

3349

Paralepis affinis Ege

Paralepis affinis Ege, Rep. Danish Oceanogr. Exped. medit., vol. 2, A. 13, 1930, p. 81, figs. 20 to 21, p. 139, fig. 141.

North
1 Atlantic Ocean, ~~in~~ 150 to 4000 meters.

Depth 11 1/5; head 5 1/3. Snout 2 1/5 in head; eye 4 1/3, 2 in snout; mouth cleft reaches front pupil edge, length 2 1/8 in head; ~~interorbital low, apparently level;~~ 3 slightly curved teeth at front of each premaxillary, then 6 inclined and finally 18; 2 slender erect teeth at either side of mandible in front, then 2 shorter, then second pair with still longer, then 2 groups of 3 teeth of which 1 or 2 teeth equally long

long as longest then, and finally 2
teeth of which long and posterior
group of 3 short ones; 3 straight erect
teeth at front of each palatine with
short tooth followed by 9 curved teeth;
interorbital low, apparently level.

D. 9½, base 7 in head, inserted
well behind ventral; adipose fin 5,
inserted over last anal rays and extends
behind anal fin base; D. 28, fin
base 1⅛ in head, origin midway between
ventral origin and caudal base;
caudal forked, apparently less than

snout; pectoral 3 4/5 in head;
ventral 4 1/2, origin midway between
front eye edge and caudal base.

End of muzzle and upper
surface of head behind eye together
with back dusted with minute dark
dots, on tail posteriorly and caudal
peduncle more or less reflective of
myomeres. Length 103 mm. (Ege.
Atlantic Ocean.

3352

Paralepis elongatus (Brauer)

Anoxodis elongatus Brauer, Deutsch Tiefsee Exped. Valdivia, vol. 15, Tiefsee Fische, 1906, p. 140, text fig. 68. N. 2°36' 5" E. 3°27'5", 1200 meters, Gulf of Guinea; S. 10°8'2" E. 97°14'9", 2400 meters, north of Cocos Keeling; N. 7°1'2" E. 85°56'5", 2500 meters, Bengal Bay; N. 4°56' E. 78° 15'3", 2000 meters, south of Ceylon; S. 6° 19'3" E. 73°18'9", 1900 meters, Chagos Group; S. 3°24'6" E. 58°38'1", 2000 meters, Seychelles. — Gilchrist and Von Bonde, Fisher. Marine Biol. Surv. South Africa, Rep. No. 3, 1922 (1924), No. 7, p. 7 (off Natal, 600 fathoms). — Barnard, Ann. South Afric. Mus., vol. 21, June 1925, p. 249 (compiled). — Ege, Rep. Danish Oceanogr. Exped., vol. 2, A. 13, 1930, p. 50 (discussion).

3353

Paralepis speciosus (not Bellotti)
Prietschmann, Sitz. Ber. Akad. Wiss. Wien,
math.-naturw. Klasse, vol. , pt. , 1914,
p. 440, pl. 4, fig. 4 (part). — Regan,
Brit. Antarctic Terra Nova Exped.,
Zool., vol. 1, pt. 4, 1916, p. 138 (part).
Lestidium (Bathysaurus) speciosus Parr,
Bull. Bingham Oceanogr. Coll., vol. 3,
art. 3, Dec. 1928, p. 42 (part).

Depth 5 2/3; head 3 3/4. Snout 2
in head from snout tip; eye 4, 1 7/8
in snout; maxillary extends back
opposite front pupil edge, length
1 4/5 in head from snout tip; premaxillary
with larger and many small teeth,

in mandible 5 moderately large and 3 or 4 smaller; 3 or 4 moderately large teeth on palate; interorbital low, apparently level.

D. 10, fin base 4 1/2 in total head length, inserted little behind ventral origin; adipose fin 4 2/5; A. 25 or 26, fin base 1 2/3, fin origin midway between ventral origin and last anal ray base; caudal 2 3/4, deeply emarginate; least depth of caudal peduncle 8; pectoral 3 1/8; ventral 8.?

Back dotted with brownish blacks;

3355

under side of tail paler. Eight blackish peritoneal pigment sections. Length 30 mm. (Brauer.)

South Atlantic and Indian Oceans.

3356

Paralepis pacificus Parr

Paralepis pacificus Parr, Bull. Bingham Oceanogr. Collection, vol. 2, art. 4, Oct. 1931, p. 19, figs. 6 (outline) 7 (dentition).

N. 20°48'15" W. 106°11'50", 540 fathoms.

3357

Parakepis nudus (Gilbert)

Lestidium nudum Gilbert, Bull. U. S. Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 607, fig. 236. Pailolo Channel, between Molokai and Maui, in 283 to 284 fathoms. — Waite, Trans. New Zealand Inst., vol. 42, 1909 (1910), p. 374 (Denham Bay, Sunday Island, Kermadec Group). — Parr, Bull. Bingham Oceanogr. Collection, vol. 3, no. 3, Dec. 1928, p. 44 (compiled). — Fowler, Mem. Bishop Mus., vol. 10, 1928, p. 66 (compiled).

Depth 11 1/3; head 4 2/5, width 4 1/2. Snout 1 7/8 in head; eye 5 2/3, 2 4/5 in snout, greater than interorbital; maxillary reaches 9/10 to eye, length

2 in head; interorbital 7 1/3, level or only slightly depressed medially. Gill rakers as row of short, minute, spinules or denticles of irregular length. No scales. Lateral line wide tube, inclosed by series of about 70 small, closely imbedded concealed scales, not extended behind middle of anal.

D. 9, fin height 4 1/5? in head; adipose fin 4 1/4; A. III, 31, first branched ray 4 1/4; least depth of caudal peduncle 9; caudal 5 1/3?, damaged, well forked; pectoral 3; ventral 4 1/5?

3359

Pale or light brown, back scarcely dusky. Dark brown Y like marks on occiput and nape. Sides of snout and gill membranes dusky. Opercle silvery white. Caudal peduncle with dusky, extends forward opposite middle of anal. Fins pale brownish to whitish. Caudal little dusky. Each ventral with small black basal spot.

Pacific Ocean.

51615 U.S.N.M.
Pailolo Channel, between Molokai and Maui. In 284 fathoms.

Length 195 mm. Type of Lesticium nudum.

3360

Paralepis philippinus new species

depth 10 4/5 to 12; head 4 3/5 to 4 2/3, width 4 1/2 to 4 3/4. Snout 1 4/5 to 1 7/8 in head; eye 5 1/3 to 6, 2 4/5 to 3 1/5 in snout, greater than interorbital; maxillary reaches 1 1/10 to 1 1/8 in snout, length 2 to 2 1/8 in head; maxillary teeth all small, uniform; mandible with 8 pairs of rather long slender canines; 4 large depressible canines on each palatine; interorbital 6 3/5 to 6 2/3, low, level, depressed medially. Gill rakers as minute subequal short points, greatly less than gill filaments, which 1 1/2 in eye.

3361

Scales in lateral line 61 to 64
extending about midway on little
beyond in length of anal fin.
Apparently no other scales on body.

D. II, 8 or II, 9; fin origin about
2/5 to 3/7 in space between ventrail
and anal origins, first branched
ray 3 7/8 to 4 1/8 in head; adipose
fin 6 to 6 2/5; A. III, 34 or III, 35,
first branched ray 3 7/8 to 4 1/4;
least depth of caudal peduncle
1 1/3 to 1 2/3 in eye; caudal 3 to 3 1/5
in head, with slender pointed lobes,
deeply forked; pectoral 2 2/3 to 2 7/8,
with 11 or 12 rays; ventral 3 3/4 to 4,

rays 9.

Pale or light brown generally, usually with distinct brassy sheen on belly. Opercles and lower sides of head with silvery white reflections. Iris silver to leaden gray. Interorbital and occiput with dark brown. Small blackish brown spot close before front eye edge. Sides of caudal pedeuncle and tail posteriorly with brassy reflections. Fins all more or less pale to whitish.

Diagnosis. Related to Paralepis nudus (Gilbert) but differs in the slightly more posterior insertion

of the dorsal, In P. mudus the dorsal origin falls near first 2/7 in space between ventral and anal origins. It also has fewer anal rays than the present species.

Type No. U.S.N.M.

5 examples. Port Dupion, Leyte. March 17, 1909. Length 129 to 140 mm. From the jaws and gullet of one example several larval fishes, crustacea and annelids were taken. Paratypes.

1 example. Varadero Harbor. July 22, 1908. Length 122 mm. Type.

3364

Paralepis thermophilus Ege

Paralepis thermophilus Ege, Rep. Danish Oceanogr. Exped. Medit., vol. 2, A. 13, 1930, p. 89, figs. 22 - 23, p. 142, fig. 144, North Atlantic Ocean, 600 meters.

Paralepis atlanticus Borodin,

Depth 11; head 4 1/3. Snout 2 1/10 in head from snout tip; eye 4 3/4, 2 1/5 in snout; mouth cleft reaches slightly behind front eye edge though not to pupil, length 2 in head from snout tip; 2 curved teeth at front of each premaxillary, followed by 12 wide spaced teeth; at front of mandible either side an erect, slender, slightly curved tooth, followed by little tooth, then 4 long teeth with shorter one before first and shorter also before

second and finally isolated short posterior tooth; each palatine with 3 fairly large front teeth and further back 5 smaller ones; interorbital very, apparently little convex.

D. 11, fin base 4 7/8 in total head length, origin slightly before ventral origin; adipose fin 4 3/4, wholly above bases of last anal rays; A. 30, fin base 1 1/4 in total head, origin midway between ventral origin and base of last anal ray; caudal 2 1/4? in total head, forhead; least depth

of caudal peduncle 6 1/5; pectoral 3 2/5?; ventral 6 1/3?.

Muzzle and upper edge of back from behind eye covered with minute dark dots, also some sprinkled before lower edge of eye, several clusters along front of abdomen, postventral edge to front of anal and patch before caudal base.

Length 43.5 mm. (Ege.)

North Atlantic.

3368

Paralepis intermedius Poey

Paralepis intermedius Poey, Rep. Fis. Nat. Cuba, vol. 2, 1866, p. 416. Cuba. — Goode and Bean, Oceanic Ichth., 1895, p. 120 (copied). — Ege, Rep. Danish Oceanogr. Exped., vol. A. 13, 1930, p. 94, figs. 24-25, p. 145, fig. 36 (Atlantic).

Xudis intermedius Jordan and Evermann, Bull. U. S. Nat. Mus., No. 47, pt. 1, 1896, p. 600 (copied).

Lestidium intermedius Parr, Bull. Bingham Oceanogr. Coll., vol. 3, art. 3, Dec. 1928, p. (44) 46 (not material, which apparently unidentifiable).

3369

Depth 14 2/3; head 6 1/6. Snout 1 9/10 in head from snout tip; eye 5, 2 1/2 in snout; mouth cleft reaches front of eye, length 2 in head from snout tip; interorbital low, apparently slightly convex.

D. 10, fin base 6 in total head length, origin little nearer anal than ventral origin; adipose fin ?; A. 43, origin midway between ventral origin and last anal ray base; caudal emarginate; least depth of caudal peduncle 4 1/4 in total head; pectoral 3 3/4; ventral 5.

Length 43.5 mm. (Ege.

North Atlantic "

3370

Paralepis japonicus (Tanaka)

Lestidium japonicum Tanaka, Limnotat.

Dec. 25, 1908,
Zool. Japon. Tokyo, vol. 7, pt. 1, ~~1909~~,
p. 27. Sagami Sea. — Parr, Bull.
Bingham Oceanogr. Collection, vol. 3,
No. 3, Dec. 1928, p. 44 (compiled).

Depth 15; head 5 to 5 1/8. Snout
2 in head; eye 6 1/3, impinging on
upper profile; mouth scarcely
reaches orbit, lower jaw slightly
longer; anterior arched portion of
premaxillaries toothless, near front
each side long depressible canine,
preceded by one or 2 much smaller,
depressible teeth; mandibular
teeth biserial, outer row short and
fixed, inner row longer, canine like,

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depressible, 9 each side; palatine teeth biserial, inner large, canine like, depressible, 6 to 9 each side, outer short, fixed and extend further back; each side near median part of tongue longitudinal series of small depressible teeth; interorbital 10 to 14 in head, slightly concave.

Lateral line incomplete, ends behind middle of anal fin.

D. 9 or 10, inserted slightly nearer anal origin than ventral origin also slightly nearer pectoral tip than

caudal base; adipose fin small,
inserted before last anal ray;
caudal forked, rudimentary rays
reach anal base; A. 42 to 49;
pectoral rays 10 to 12; ventral 9 or 10,
origin nearer hind nostril than
caudal base.

Translucent, back somewhat darker,
sides of snout blackish. Small black
spot directly in front of eye and
rather faint one immediately below.
Opercles externally bright silvery,
internally blackish. Median line

of abdomen blackish with median narrow whitish space backward from vertical through pectoral tip. Caudal peduncle washed with blackish and silvery, extended forward to middle of anal. Peritoneum black. Fins largely translucent, slightly dusky. Caudal and anal slightly blackish, front part of anal black punctate at base. Ventral similar basally.

Length without caudal 190 mm.
(Tanaka.)

Japan. Closely related to Paralepis intermedius.

3374

Genus Ludis Rafinesque

Ludis Rafinesque, Carat. Nuov. Animal. Piant. Sicilia, 1810, p. 60. Type Ludis hyalina Rafinesque, monotypic.

Body moderately compressed, elongate. Head compressed. Teeth triangular, edges uneven or jagged and of equal length. Palatine teeth very small in young, absent with age. Body covered by minute or moderate scales. Dorsal rays 14 or 15. Pectoral fin rays long in postlarval stages or nearly reach dorsal fin.

3375

Sudis hyalina Rafinesque

Sudis hyalina Rafinesque, Car. Nuov. Animal. Sicilia, 1810, p. 60, pl. 1, fig. 2. Sicily. — Bonaparte, Iconogr. Fauna Italica, vol. 3, Pesci, pt. 1, fasc. 29, 1840, no pagination, pl., fig. 1 (Italy); Cat. metod. Pesc. Europ., 1846, p. 35. — Günther, Cat. Fishes Brit. Mus., vol. 5, 1864, p. 420 (Messina). — Canestrini, Fauna Italia, Pesci, 1874, p. 127 (Sicily). — Goode and Bean, Oceanic Ichth., 1895, p. 127, pl. fig. 144 (compiled). — Fowler, Proc. Acad. Nat. Sci. Philadelphia, 1911 (1912), p. 571 (Bonaparte material).

3376

Saudis hyalinus Bellotti, Atti Soc. Ital. Sci. Nat. Milano, vol. 20, 1877, p. 54

— Lütken, Videnske. Medd. naturh. Foren. København, ser. 5, vol. 3, 1891 (1892),

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— Eger, Videnske. Medd. naturh. Foren. København, vol. 69, 198, p. 243

— Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, dec. 1928, p. 35 (compiled).

Paralepis hyalinus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 361 (copied). V— Vanzo, R. — Bellotti, Atti Soc. Ital. Sci. Nat., vol. 33, dec. 1891, p. 140, pl., fig. 5-5a (compiled); 917, vol. 34, 1892, p. 34 (diagnosis).

Paralepis hyalina Carus, Prodr. Fauna medit., vol. 2, 1893, p. 567 (compiled).

— Hjort, The depths of the Ocean, 1912. p. 613
south west of Azores, 3886 meters, north of
Azores).

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Saudis hyalinus Bellotti, Atti Soc. Ital. Sci. Nat. Milano, vol. 20, 1877, p. 54

— Lütken, Videnske. Medd. naturh. Foren. København, ser. 5, vol. 3, 1891 (1892),

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— Eger, Vidensk. Medd. naturh. Foren. København, vol. 69, 198, p. 243

— Parr, Bull. Bingham Oceanogr. Collection, vol. 3, art. 3, dec. 1928, p. 35 (compiled).

Paralepis hyalinus Cuvier, Hist. Nat. Poiss., vol. 3, 1829, p. 361 (copied). V— Vanzo, R. Comm. Talass. Ital. Venice, Mem. 59, 1917, (larval).

Paralepis hyalina Carus, Prodr. Fauna Medit., vol. 2, 1893, p. 567 (compiled).

Depth 9 to 10 1/2; head 3 to 3 1/5, width 4 1/2 to 5 2/3. Snout 1 3/5 to 1 2/3 in head from snout tip; eye 5 1/3 to 7, 3 1/4 to 5 in snout, greatly exceed interorbital; maxillary reaches 1/5 to eye or 1/8 in eye, length 2 in head; interorbital 8 to 8 2/3, depressed, slightly concave medially. Gill rakers reduced numerous minute uniform denticles; gill filaments 2 1/4 in eye.

Scales 65 to 70 in lateral line, extend nearly to caudal base.

D. II, 10, first branched ray 3 1/4 to 3 4/5 in head; adipose fin 7 2/5 to 11; A. III, 18, first branched ray 4 to 4 4/5;

caudal 2 1/2 to 3 1/10, well emarginate or forked; least depth of caudal peduncle 8 4/5 to 9 1/2; pectoral 1 3/4 to 2 1/8; ventral 4 1/8 to 4 1/4.

Pale or dull brown, nearly uniform. Sides of head with pale or whitish reflections. Fins pale brownish. Iris dull slaty.

Mediterranean.

48268 U.S.N.M. Bay of Naples, Italy. V.E. Meeks. Length 410 mm.

to A.N.S.P. Italy.

C.L. Bonaparte 354. Dr. T.B. Wilson.

Length 330 to 405 mm. 3 examples.